THE AUTOMOBILE

Excellent Sport at Plainfield Club's Second Annual Hill Climb

OVER a course that is pronounced by experts to be far and away the most difficult in the East, the Plainfield Automobile Club, of Plainfield, N. J., conducted its second annual hill climbing contest, Saturday afternoon. Some astonishingly good time was made in the ten events; not a mishap of consequence marred the pleasure of the day and good management and good weather combined to make the sport enjoyable to a crowd of well over 10,000 persons.

The hill is called Johnson's Drive, but it never could have figured much as a pleasure speedway, for it is steeper than the Dead Horse hill at Worcester, and more tortuous than Giant's Despair at Wilkes-Barre. Just short of 4,000 feet in length, there is not a stretch of 100 yards without its wrenching turn or heart-breaking grade. The total rise is only 300 feet, but it certainly seems much greater. The starting point is on level ground and the course is practically flat for 75 yards, then swinging around at right angles it mounts a stiff grade to a letter S curve that is so sudden that it makes the ordinary hairpin turn look like a straight line. Then comes almost a circle of heavy grade, followed by another rectangular turn, and the finishing stretch is a little less than 100 yards of comparatively straight going.

The turns of the letter S curve were banked, which explains the fast time made on the general average. De Palma in the free-for-all did not keep his throttle open for longer than 10 seconds at any one time in making the record-breaking ascent. His huge motor, roaring like a lion, was opened and closed a dozen times during his trial and finished with a rattle of explosions that sounded like a machine gun in action.

BUICK, CHARLES JONES, DRIVER, WINNER 161-230 CLASS

The day was perfect and long before the scheduled hour for starting crowds assembled along the course. Practically every person in the big crowd had a program and, remarkable to relate, the running of the events was precisely in accordance with the terms of the program.

Five Hupmobiles and a Schact competed in the first event, all finishing the course in creditable shape, with the honors going to the Hupmobile owned, entered and driven by A. C. Dan, in 2:04. On account of the size of the Hup, it was able to negotiate the sharp turns in commendable style. The Schact, which appeared during the morning for final practice stripped to the running gear, was required to replace the ordinary body on the car. The sudden change in rig probably did the car no good in the running of the event.

Event 2 was taken rather easily by a Mitchell, but the running of the race was marked by a bit of hard luck for the Oakland entrant. This car came whooping up the hill and was finishing about 10 seconds better than the time of the winner, when the clutch began to slip and the motive power died out, despite everything Driver Howard Bauer could do,

1—Dean Rankin's Chalmers "30" which won the 301-450 race

2—Houpt-Rockwell, victor in the 451-600 event

3—The big Fiat, which De Palma drove to the course record

4—The Krit, which captured the place in the 160-230 race

within thirty feet of the winning line. Buick 22 also participated in the tough luck of the hill-climbing game in this event. The car suffered two blow-outs on the first turn and could not finish.

As the Oakland certainly had a margin of 10 seconds when the clutch went wrong and as the Buick later in the afternoon won in its piston displacement class in 21 seconds better than the winner of this event, some of the elements of racing luck were particularly emphasized.

Event 3 was captured by the Correja in easy fashion. During final practice this car suffered a broken front axle and the substitute piece was only installed a few minutes before the car was called to go upon the line. In its piston displacement class the new front axle of the Correja snapped when the car was making the big circle, and Driver Joe Taylor had all he could do to keep the car from diving over the precipice. No one was hurt, however.

Event 4 was won by the Buick driven by veteran Phil Hines, who remarked after the race that in his ten years of driving experience he had never encountered anything like the Johnson's Drive.

The classes for the more costly touring cars did not fill and the next event was No. 8, the free-for-all. E. W. C. Arnold's Fiat, driven by De Palma, broke the record for the hill by 8 seconds, finishing in 1:20. He had to make the big special car go at a record clip because two stock cars that finished behind him came so close that they also broke the former mark. These were the Chalmers, driven by Rankin, which made 1:22 1-5, and the Houpt-Rockwell, Stanley Martin, which made 1:22 3-5.

Event 9 produced a pretty fight. The Maxwell was the only entry up to a few minutes before post time, when two K-R-I-Ts made post entry, and just a few minutes before the race the little Buick that suffered the blow-outs in its price classification race was thrown in. The result was that the Buick won by nearly 21 seconds, while the K-R-I-Ts fought it out for second place. Through a misconception of the rules for stock chassis classes, which do not require the same load to be carried as those applying to the touring car divisions, a protest was about to be filed against the winner on behalf of the K-R-I-Ts, which carried the full complement of passengers; but the matter was eventually explained to the satisfaction of all.

Event 10 was taken by the S. P. O. after the Correja broke its axle, and event 11 was won in astonishing style by the Chalmers entrant. This car had finished second in the free-for-all and was generally looked upon as a sure winner, but in making the first turn Rankin suffered a blow-out of the right rear shoe, despite which, however, he continued and managed to get across the line in 1:27 2-5, leaving him a winning margin of over 2 seconds.

Event 12 for cars with piston displacement of from 451 to 600 cubic inches found three contestants, a Houpt-Rockwell and two Stearns cars. The Houpt-Rockwell proved an easy winner in the same time it made in the free-for-all. The final number, an amateur event, brought out only the two Stearns cars that competed in the preceding number. The machine owned, entered and driven by C. W. Winslow got home in 1:28 3-5.

Cups were awarded the winners in each of the classes and cash purses were given the first and second in the free-for-all.

The officials who handled the affair were as follows: Referee, J. H. Wood; starter, Arthur Smith; timers, Dr. F. C. Ard, A. L. C. Marsh, G. J. Tobin, C. E. Verian, E. A. Lowe and E. Rushmore.

Contest Committee, Hugh A. Todd, Alexander Milne, Allen B. Laing, F. L. C. Martin, C. B. Brokaw, A. C. Thompson, Kent Bender, Gus Barfuss and Hiram A. Woodruff; Technical Committee, A. F. Camaclo, R. D. Williams, F. O. Ball and H. A. Todd.

The officers of the Plainfield Automobile Club are: H. W. Marshall, president; Hugh A. Todd, vice-president; W. R. Townsend, secretary, and F. O. Bell, treasurer. Following the race program the club entertained the entrants at dinner in the club rooms at the Brass Kettle Inn. The summaries:

Class A, Div. 1A—Cars selling $800 and under.

No. Car	Entrant	Driver	Time
12—Hupmobile	A. C. Dan	A. C. Dan	2:04
4—Hupmobile	E. B. Libbey	E. B. Libbey	2:09
14—Hupmobile	F. L. C. Martin	R. D. Martin	2:19 4-5
5—Schact	Gray Motor C. Co.	J. S. Gray	2:21 2-5
16—Hupmobile	F. L. C. Martin	E. D. Cutting	2:22 3-5
15—Hupmobile	F. L. C. Martin	R. E. Gillam	2:28 1-5
Cars selling from $801 to $1200—			
18—Mitchell	F. L. C. Martin	W. Kattering	2:03 4-5
21—Maxwell	W. F. Hobbie, Jr.	Hobbie	2:10 4-5
3—Oakland	Oakland M. C. Co.	Howard Bauer	did not fin.
22—Buick	Buick M. C. Co.	Chas. Jones	did not fin.
Cars selling from $1201 to $1600—			
10—Correja	Correja M. C. Co.	Joe Taylor	1:40 3-5
17—Mitchell	F. L. C. Martin	F. McCarthy	1:57 3-5
Cars selling from $1601 to $2000—			
6—Buick	Buick M. C. Co.	Phil Hines	1:32
3—Oakland	Oakland M. C. Co.	Howard Bauer	1:35
Free-for-all—			
7—Fiat	E. W. C. Arnold	Ralph DePalma	1:20
19—Chalmers	A. C. Thompson A. Co.	E. Rankin	1:22 1-5
23—Houpt-Rockw'll	H. S. Houpt Co.	Stanley Martin	1:22 3-5
1—Buick	R. E. Beardsley	Beardsley	1:33 2-5
160-230 cubic inches piston displacement—			
22—Buick	Buick M. C. Co.	Charles Jones	1:40
24—Krit	R. T. Wissn	Owen	2:01 4-5
25—Krit	E. W. Huntley	Roddon	2:03 1-5
21—Maxwell	W. F. Hobbie, Jr.	Hobbie	2:10 2-5
Cars of 231-300 cubic inches—			
20—S. P. O.	H. S. Lake	J. Juharz	1:31 2-5
10—Correja	Correja M. C. Co.	Joe Taylor	did not fin.
Cars of 301-450 cubic inches—			
19—Chalmers	A. C. Thompson	E. Rankin	1:27 2-5
2—Berkshire	S. H. Clapp	Clapp	1:29 4-5
6—Buick	Buick M. C. Co.	Phil Hines	1:31 2-5
1—Buick	R. E. Beardsley	Beardsley	1:35
Cars of 451-600 cubic inches—			
23—Houpt-Rockw'll	H. S. Houpt Co.	Stanley Martin	1:22 3-5
8—Stearns	J. A. Rutherford	Rutherford	1:29 3-5
11—Stearns	C. W. Winslow	Winslow	1:30
Amateur Event—			
11—Stearns	C. W. Winslow	Winslow	1:28 3-5
8—Stearns	J. A. Rutherford	Rutherford	1:29 1-5

Sweepstakes Announced for Parkway

W. K. Vanderbilt, Jr., president of the Long Island Motor Parkway makes announcement that on Saturday, July 30, the "Motor Parkway Inaugural Sweepstakes" will be held on Long Island. There will be a sweepstakes amateur event at 10 miles, a free-for-all event and a Class C event for cars ranging from 301 to 600 cubic inches piston displacement, without weight limitation.

Valuable cups will be given in the amateur and the Class C events, with first and second cash prizes of $100 and $50 in the free-for-all event.

The conditions for these two are practically identical with those that will prevail in the Vanderbilt Cup race to be held on the Parkway on October 1, and the Grand Prize race on October 15, this fall.

It is expected that the amateur event will bring a large field of entries from the Amateur Contest Association.

The timing will be done by the Warner electrical timing device. The start will be near Great Neck Lodge and the finish at the grand stand on Hempstead Plains. The greater portion of the course will be on the newly completed section of the Parkway which has a surface of tar-treated sand and gravel, laid on cement. The curves are all scientifically worked for sustained high speed—sliding, slipping and skidding are eliminated and there is absolutely no dust. Phenomenal time, undoubtedly, will be made.

Drivers of motor cars can approach the stand from Great Neck, Roslyn, Jericho and Meadow Brook lodges up to 11:30 o'clock a. m., when the Parkway will be temporarily closed for the start, which will be at 12 o'clock noon.

All events will be run in heats of two cars, with finals and semi-finals affording an afternoon of high-class sport. Entry blanks may be obtained from A. R. Pardington, second vice-president, at Mineola, L. I. Entries will be received up to the last mail on July 28.

5—Joe Taylor's Correja, No. 10, winner of $1201-$1600 class

6—The "Hup" which annexed the $800-and-under honors

7—Mitchell, No. 18, winner in the $801-$1200 event

8—The Maxwell, as usual, performed creditably

New Automobile Law Under Hamper of Political Expediency

Chauffeurs' Qualities to Be Shucked in Seven Seconds

State of New York Appended to a Touring Club Enterprise

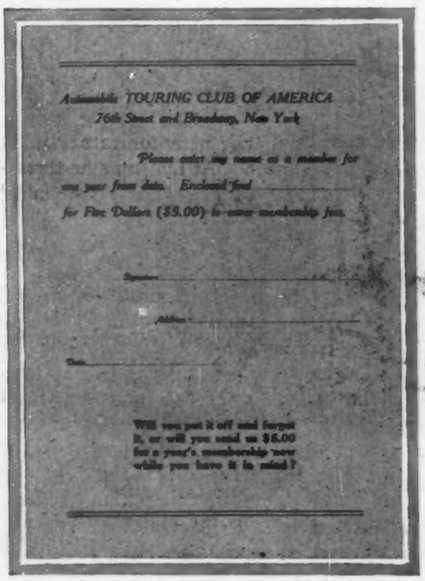
THESE are lively days for the chauffeur. He is being examined as to his qualifications touching on and appertaining to the propulsion of the automobile and his knowledge thereof. The great and sovereign State of New York is propounding the questions, through the instrumentality of Frederick H. Elliott, erstwhile secretary of the A. A. A., and more recently secretary of the Touring Club of America. In fact, Mr. Elliott is still secretary of the latter organization, and despite his new job as chief examiner of chauffeurs he is to be found in the offices of the club at Seventy-sixth street and Broadway.

But, as was said, these are the days when the 35,000 chauffeurs of New York City are as industrious as a boy with his first Waterbury. If they intend to obey the law, they must pass Mr. Elliott's examination, whereupon a certificate of character and ability will issue to them from the fountain head of the State. The Callan law provides for registration of chauffeurs, but does not outline the procedure. It delegates that power to the Secretary of State, and that official, in his discretion, passed the "buck" to Frederick H. Elliott, as chief examiner in this district.

Mr. Elliott was instructed to frame a series of questions that would test the knowledge of the applicants for certificates, so that if they were answered satisfactorily, the great American public might employ the holder of a certificate with full assurance that the aforesaid holder would not make it a practice to do miles in :47 before dawn on Riverside Drive; that they have distinct knowledge of the difference between the transmission and the magneto and they have only such criminal records as they have confessed to in their applications.

All these things are important and greatly to be desired, and in the wisdom of the Callan law the delegation of powers under it to the Secretary of State and the subsequent passing of the "buck" to Mr. Elliott, the officials certainly have made a showing of activity.

The procedure is simplicity itself. All the applicant has to do is to go to the offices of the Touring Club of America and ask for blank application papers. Any of the half-dozen obliging clerks of the Touring Club will be pleased to supply the blanks, or if the applicant wishes to get them in other ways, such a thing may be done. Mr. Elliott himself sometimes stands behind the counter, upon which is piled literature and prospectuses of the club and insistent little blank applications for membership, at $5 the year.


Automobile TOURING CLUB OF AMERICA
76th Street and Broadway, New York

Please enter my name as a member for one year from date. Enclosed find for Five Dollars ($5.00) to cover membership fee.

Signature

Address

Date

Will you put it off and forget it, or will you send us $5.00 for a year's membership now while you have it in mind?

Of course, the applicants for State licenses as chauffeurs do not have anything to do with these applications for membership in the club, but many of them wonder whether such membership might not have its advantages.

At any rate, they have the chance to look at the applications for membership while they are waiting for the obliging clerks to furnish them with applications for license. In fact, they may examine the maps and pretty signs of the Touring Club of America, while leisurely polishing up their spelling or syntax or sharpening their descriptive faculties for the ordeal of examination.

The application blank, when it has been sifted out from among the other literature and application blanks for membership in the club, is found to be a beautiful pink affair containing 19 queries of an intimate and personal nature.

Counting to-day, there are exactly 16 working days during which applicants may be examined before the law goes into effect. Woe betide any luckless chauffeur who fails to have an "engrossed" certificate on the morning of August 1, 1910! Preparations are being made to cause the careless ones and the unfortunates who fail to take the examination to rue the day they overlooked their chance.

A room has been secured for the work of examining the applicants. It contains desks for chauffeurs, and Mr. Elliott says it will be operated hard as soon as things get to going smoothly.

When seen at the rooms of the Touring Club of America Tuesday, Mr. Elliott seemed quite certain that all would be accomplished according to the seven-second schedule. But in discussing the matter, one little jarring note pervaded the harmony of the conversation. Said Mr. Elliott:

"Nobody knows exactly how many applicants we will have to examine, but I believe we shall be able to get through all right. I am not stuck on the job, but everybody seemed to think I ought to take it and keep it, and so I am working at it. But it is tough for the State officials to set a man to do a certain thing in a certain time and then hamper him with dull tools. Of course, some of the men who have been selected for the board of examiners may be all right, they do not shape up with my ideas as to what board members should be. In selecting a board under political auspices, the best of material is not always available, and I suppose we shall have to do the best we can with the material furnished. I can say that if I was selecting the board it would have had a far different complexion."

The names and addresses of the board that Mr. Elliott referred to are as follows:

George Abrams, 66 Orchard street; A. Asen, 121 Broome street; James Bennett, 286 Degraw street, Brooklyn; Frederick Beyer, 548 West Fifty-first street; John E. Carney, 325 President street; Nicholas D. Collins, 377 Atlantic street; Robert H. Cowden, Jr., 33 Ross street; David C. Decker, Port Richmond; Samuel Ginsburg, 222 Rivington street; Abraham Gold, 713 Seventh avenue; Samuel Hoffman, Confidential Clerk, 272 East Houston street; George M. Janvrin, Examiner of Publicity, 302 Westminster road; Fred Kuser, 441 East Fifty-seventh street; Walter R. Lee, 554 Ninth street; Jesse F. Madden, 241 Powers street, Brooklyn; James R. Murray, 116 West Seventy-first street; George H. Nason, 57 Greenpoint avenue, Brooklyn; Mark Natkiel, 612 Sixth street; Millard C. Perkins, 319 West Fifty-fourth street; A. E. Preyer, 170 West 136th street; Charles Reich, 233 Tenth avenue; M. J. Rogan, 330 West Forty-seventh street; John A. Saam, 478 West 146th street; Harry Safir, 341 Sixth street; Robert Spitzer, 236 Linden avenue, Brooklyn; Emil Stecher, 745 Sixth street; Seymour Taft, 259 Mott avenue,

Long Island City; William K. Tattersall, 81 Enfield street, Woodhaven, L. I.

The examination, in order to accomplish the intention of the law, must be severe and searching. When it is all over and the official O. K. of the State is placed upon the papers, it is supposed to prove the competence, honesty and industry of the chauffeurs. Only one thing stands in the way, and that is the matter of time.

It has been figured that working union hours every day from now until the law goes into effect, the examining board can devote a little less than seven seconds to each applicant for examination. If the board works four full shifts each day, including Saturdays, which is an unbelievably liberal estimate, they will be working 230,400 seconds, and as there are somewhere around 35,000 chauffeurs who must be examined by August 1 in order to avoid various dire penalties, an example in long division will show that seven seconds per applicant is a reasonable estimate of the amount of time that can be devoted to each.

As an expert writer is able to sign his name in about that time, the problem that confronts the chauffeur is by no means as simple as it might appear.

A conservative estimate of the number of chauffeurs engaged in New York City and vicinity, known as District No. 1, is put at something like 35,000. The sovereign State of New York, in its wisdom, places 35,000 citizens and their chances of making a living at the mercy of the Chief Examiner, who admits that he is engaged in another business, and whose name appears as Secretary of the Touring Club of America; he is bound by his oath of office to examine every chauffeur as to character and competence, and if he expends all his time in the interest of the office which has been handed to him by the Secretary of State he will have apparently less than 7 seconds of time in which to keep from being a perjurer. But he is engaged in other business, and if he spends any time at all in the conduct of his private affairs during the working hours as figured out herein, he will make more or less heavy inroads upon the few seconds of time which already stand between him and perjury.

Granting that the Chief Examiner is a diligent servant, the fact remains that the chauffeurs to be examined, if they while away any of the fleeting seconds to which they can possibly lay claim, reading the literature of the Touring Club of America, will further reduce Mr. Elliott's ability to place at the disposal of the owners of automobiles 35,000 capable chauffeurs in 230,400 seconds, and if, as the Secretary of State proclaims, the citizens are to be given the administrative advantages of a particularly wise law, the wonder is what became of the wisdom that made it possible for the chauffeur to spend any part of his precious seven seconds amid the distractions afforded by the literature of the Touring Club of America, its officers, or any other literature or persons not directly connected with the administration of the law.

At the American Automobile Association's office, when the peculiar way in which the new law is to be enforced was discussed, it was stated that the matter had been called to the attention of the Association of Automobile Clubs of the Empire State, and the opinion was expressed in forcible language that the mixing of the new automobile law with the private affairs of individuals was a gross injustice to the autoists, who will be discommoded to whatever extent the law becomes abortive.

It is confidently anticipated that the projectors of this law will feel the pressure of the indignation which is being aroused, not only in the ranks of autoists, but in the community at large, over the totally inadequate way in which the matter is being handled, and it looks as if political expediency, rather than the promise of efficient work, is the normal expectation.

Wisdom, tempered with experience, demands that chauffeurs be regulated, but by no power of the imagination can it be shown that they should be exploited. The law distinctly states that a man is to be deemed innocent until he is proven guilty, and under the law a chauffeur is entitled to the distinction of being considered a good citizen until it can be shown, by legal means, that he is not. Political expediency may have the telescopic eye which will permit it to single out a goat from the sheep in seven seconds of time, but the average citizen will scarcely be convinced of the efficacy of the plan. Thirty-five thousand chauffeurs are entitled to the exclusive service of a Chief Examiner and a corps of inspectors who are free to devote their entire time to the examining effort, and it is not believed that the State of New York can afford to put a straw in the way of a man who is entitled to the right to earn an honest living, even if he is a chauffeur.

Leading British Aviator Meets Death

BOURNEMOUTH, ENGLAND, July 12—Falling about 100 feet when the tail piece of his Wright bi-plane snapped off, the Hon. Charles Stuart Rolls, third son of Lord Llangattock, and one of the leading automobilists, aviators and balloonists of the United Kingdom, was dashed to death this morning in the presence of a large crowd composed in part of personal friends and acquaintances of the aviator.

Mr. Rolls was engaged in an accuracy contest at the time of the accident and was about to make a descent, when his aeroplane crumpled directly in front of the grandstand. He was dead before assistance could reach him. In addition to the fame he recently gained on account of of his non-stop flight across the English Channel to Calais and return, Mr. Rolls had been identified with advanced ideas in motoring and was connected with the Rolls-Royce Company, which manufactures the car of that name and which bears an excellent reputation for mechanical perfection.

He was only 33 years old and had been educated for the diplomatic service, but owing to the mechanical trend of his mind, a career in that direction was abandoned. As a balloonist he made over 150 ascents and crossed the Channel several times before the day of the aeroplane.

In the field of aviation he stood in the front rank of the world. At the time of his death he was contemplating a trip to the United States to take part in various aviation meets and transcontinental competitions scheduled for the coming fall.

Boston Parkways Closed to Automobiles

BOSTON, July 11—Boston motorists were very much disturbed to-day when they read in the papers that the Boston Park Commission had made a ruling that several roads heretofore opened to motor cars had been ordered closed at the request of Mayor Fitzgerald. If the ruling is upheld by the State Highway Commission, it means that motorists will have to go out of their way in many instances coming into Boston and going out, for some of the parkways lead directly to other near-by cities and towns.

This is the outcome of the agitation last spring by Mayor Fitzgerald to get 25 per cent. of the fees from motor cars for the maintenance of the park roads in Boston. At that time he threatened to order all parkways closed if his request was not complied with by the Legislature. This was refused and he sent out requests to both the Boston and Metropolitan Park Commissions asking that they close all parkways to the motor cars.

The Metropolitan Park Commission replied promptly that it would not do so. The Boston Commission did nothing until to-day, and its action is based upon the fact that already the State has collected more than $300,000 from motorists, with more to come, which, with the regular State fund, makes more than will be needed for the State highways. The Legislature will have to act before any sum can be set aside, however. The matter is now placed squarely up to the State Highway Commission, for the rules cannot be enforced until the Commission approves of them. A hearing has therefore been set for July 27. By that time the motorists will be organized strongly against the movement.

Good Roads Needed

A Ticklish Situation

Through Death Valley

TOWARD the Southern end of the Mojave desert, where the shadows at dawn and twilight lie purple and rose-color in the swales and arroyos that depress the yellow-gray sand, there is a territory that gives little promise for a colorless automobile trip, and the negative promise is more than fulfilled when the venturesome automobilist essays to solve its eternal problem.

J. M. Murdoch, of Johnstown, Pa., and Pasadena, Cal., who has driven a Packard car from ocean to ocean for the fun of the thing, is one of the motorists who has had the nerve to traverse the Mojave wastes clear to the portals of Death Valley. So far this year he has made two intensely interesting trips. The first was early this Spring, when he and a party of adventurous spirits tested the possibilities of a run through Daggett and around Coyote Lake to the gateway that leads into Death Valley. This trip was accompanied by a world of incident and enjoyment, and some of the roads traversed were among the most picturesque in the world.

The second tour was through the desert, skirting Owens Lake and circling through the wild waste at the base of Mount Whitney, the stateliest spire of the lower Sierras, whose head is crested eternally with a crown of snow and ice.

Over passes that seem fit only for sure-footed burros; through narrow cañons whose walls rise so high that they shut out the sunlight at noon; passing by vast stretches of waterless desert where the land is so rich that anything that grows anywhere on earth can be made to flourish mightily with the aid of water, the party explored a dozen trails that have never before been part of the itinerary of an automobile party.

They passed over great tracts of heavily mineralized country where in times past pioneer prospectors staked and lost their labor, property and lives, and they also whirled by the section in which the Spanish friars of the dead centuries labored to unearth the surface treasure of chrome silver and the marvelously rich pockets of metallic gold that served to check settlement in California until the tidal wave of 1849 swept their conservatism away.

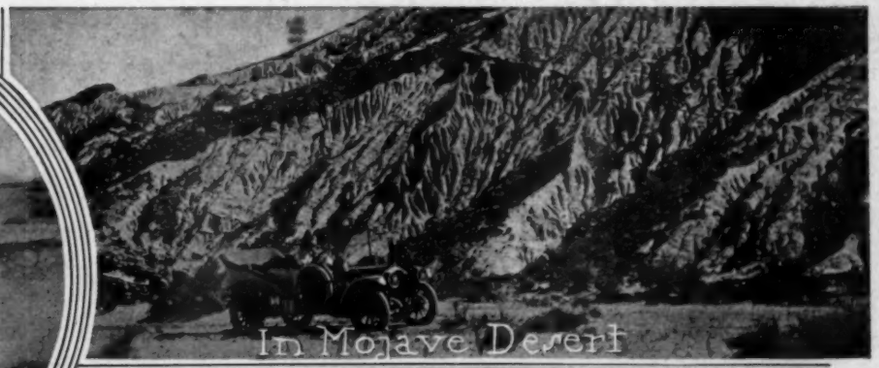
The first part of each of the tours of Mr. Murdoch was through a delightful road setting, but before he had reached his

A Bit of Good Road

Newhall Grade

Two Methods of Travel

Fording Cottonwood Creek

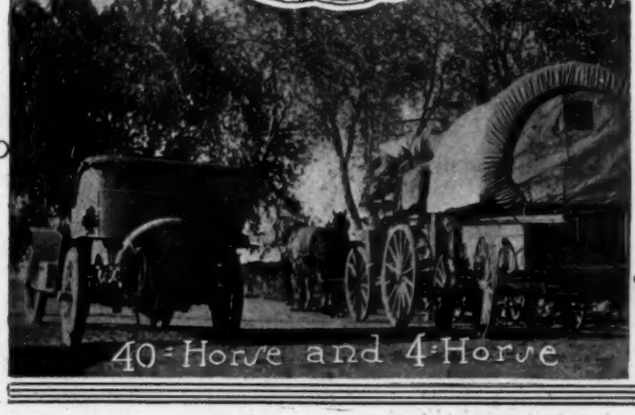


In Mojave Desert

In An Automobile

Under a Yucca Tree

Cajon Pass



40-Horse and 4-Horse

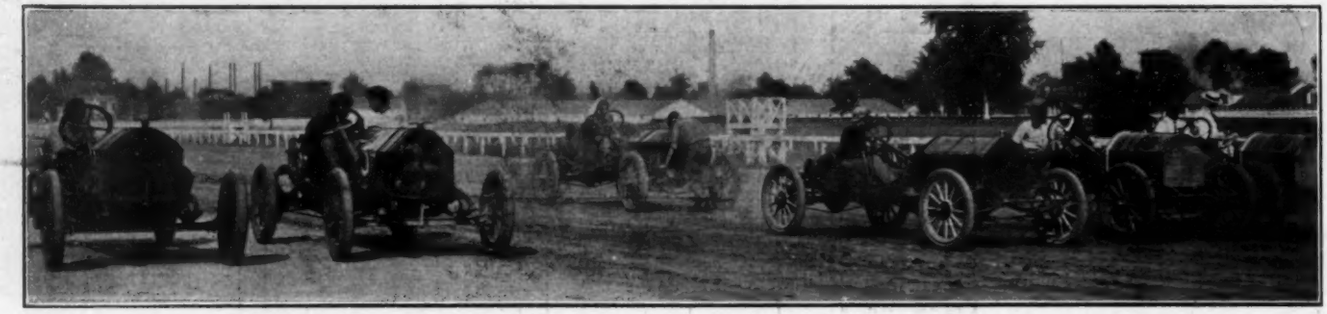
destination in each case he had figured in the rôle of pathfinder for humanity. There were a dozen spots over which his automobile was pushed where the foot of white man, the hoof of domestic animal or the wheel of the automobile had never passed before. Among the more spectacular scenes which figure in these tours are the passage of Cajon Pass, high in the Sierras; the San Francisquite cañon, a rift in the dry hills; the unspeakably rocky trails of Red Rock cañon; the silence and mystery of the Soledad and the depressing stillness of Death Valley itself. The valley is from five to ten miles wide, the higher ground being a formation of immense sand drifts. During heavy wind storms these drifts are shifted and blown in every direction. The Murdoch party was frequently compelled to put up top and curtains to keep off the sand the wind blew so fiercely about them. The Newhall grades, that once afforded a certain kind of freight thoroughfare and which in their time have carried untold millions of treasure packed on mule-back or dragged along by great strings of sturdy little horses, were used by Mr. Murdoch's party. The Newhall trail is considered to be about the stiffest pull in the United States—at least the steepest long grade in the country that is used for hauling. In places the grade is fully 27 per cent., thus affording a rigorous hill-climbing test. In the course of a short time the Newhall trail will be abandoned permanently, as a road tunnel is in course of construction that will allow hauling at a much more gentle grade than the old landmark trail over which Mr. Murdoch and his party passed.

The party took a spin on the floor of Death Valley, which is as level as the floor of a ballroom. The sand is glistening white and in the full glare of the California sunshine the reflection of the light is dazzling in its intensity and glory.

When tourists return from such trips as those enjoyed by this party, faces are tanned to a temporary hue of russet leather or broiled to a shade that matches that of a Nova Scotia lobster, but the time spent in the free, wild atmosphere of the desert and mountains is said to act as a tonic, the effect of which does not wear off until long after the skin has assumed normal condition.

Mr. Murdoch, naturally enough, is a super-enthusiast and his future plans include several trips of equal charm and novelty.

Marmon Team Starred at Churchill Downs



Line-up for the five-mile free-for-all handicap at Churchill Downs, won by Hughes' Parry

LOUISVILLE, KY., July 11.—The motoring fans of this city witnessed a program of automobile races last Friday at Churchill Downs that never before has been surpassed in Kentucky. Nine well-contested events were run, and, best of all, there was but one accident, and that not serious. Harry Endicott, the E-M-F driver, was the sufferer in this, but was not dangerously injured. In the second race, before the first mile had been negotiated, the car was hood to hood with the Cole entries when a heavy cloud of dust made it impossible for Endicott to see. Speeding along at a lightning rate the machine left the track and dashed through the fence, crashing into the west wall of a stable.

The Marmon team starred on the opening day of the speed carnival and captured the biggest events of the day. The dirt track was slow because of recent rains and no records were smashed. Ray Harroun made an attempt to lower the world's record for a mile on a dirt track, but was unsuccessful. His time was 59 seconds. The most spectacular event of the afternoon was the twenty-five mile race. In Class B Ray Harroun was the first to flash past the judges' stand in 28:33, while Bill Endicott in a Cole carried off honors in Class A. His time was 31:42. Behind Endicott came No. 11, also a Cole, driven by the skilled hands of Edmunds.

Emmons (Herreshoff) won the trophy in the fifth race, which was a well balanced handicap event of five miles. Every foot of the way was bitterly fought in the free-for-all handicap event. There were seven starters. Hughes (Parry) carried off the first prize, when he negotiated the five miles in 6:05.

A remarkable feature of the day's races was that throughout the nine events there was no tire trouble of any sort. None of the local contestants entered in the events could stand the pace set by the professionals and they carried off no honors.

Eugene Straus, president of the Louisville Automobile Club, was the official referee and representative of the Contest Board of the American Automobile Association. The starter was H. C. George; judges, Lee L. Miles, Walter Kohn, L. H. Wymond and Hubert Levy. All of the officials were selected from the membership of the Kentucky Automobile Association, the Louisville Automobile Club and the Louisville Automobile Dealers' Association. The summaries:

Five miles, under 160 class—

Pos.	Car	Driver	Time
1	Herreshoff	E. P. McCormick	6:45
2	Herreshoff	Walter Emmons	
3	Herreshoff	William Smith	

Five miles, 161 to 230 class—

1	Cole	Bill Endicott	6:17
2	Cole	Lewis Edmunds	

Five miles, 231 to 300 class—

1	Marmon	Ray Harroun	5:56
2	Parry	Hughie Hughes	

Five miles, 301 to 450 class—

1	Marmon	Ray Harroun	6:05
2	Marmon	Joe Dawson	
3	Stoddard-Dayton	J. K. Gilchrist	

Five mile handicap, up to 300 class—

1	Herreshoff	Walter Emmons	6:27
2	Parry	Hughie Hughes	
3	Cole	W. Endicott	

Five miles, free-for-all—

Pos.	Car	Driver	Time
1	Marmon	Ray Harroun	5:49
2	Marmon	Joe Dawson	
3	Parry	Hughie Hughes	

Five miles, free-for-all handicap—

1	Parry	Hughie Hughes	6:05
2	Marmon	Joe Dawson	
3	Marmon	Ray Harroun	

Twenty-five miles, 161 to 230 class—

1	Cole	W. Endicott	31:42
2	Cole	L. Edmunds	

Twenty-five miles, over 230 class—

1	Marmon	Ray Harroun	28:33
2	Marmon	Joe Dawson	
3	Stoddard-Dayton	J. K. Gilchrist	

LOUISVILLE, KY., July 9—Heavy rain put a stop to the Grand Circuit auto races at Churchill Downs on the final day of the meet. Despite the weather conditions during the early part of the afternoon more than 1,000 motoring fans hied themselves to the famous course and for two hours sat in the grandstand waiting for the races to start. Their appetites had been whetted by the splendid card offered by Homer George and W. H. Wellman, the promoters, on the opening day, and they were anxious to witness more of the dare-devil driving of the speed kings on a one-mile dirt track.

At 3:30 o'clock the rain fell in torrents and owing to the dangerous condition of the track the management called the races off.

Marmonites Repeat at the Cincinnati Meet

CINCINNATI, O., Juy 10—The circuit-chasers came here to-day from Louisville for the track meet at the local course. As at Churchill Downs, the Marmon team swept the boards, although the Herreshoff and Cole also captured the class events. Summaries:

Five miles, stock chassis under 160 cu. in. piston displacement—

Pos.	Car	Driver	Time
1	Herreshoff	Emmons	6:14 1-5
2	Herreshoff	McCormick	
3	Herreshoff	Smith	

Five miles, 161 to 230 cubic inches piston displacement—

1	Cole	Endicott	6:11 1-5
2	Cole	Edmunds	
3	E-M-F	H. Endicott	

Five miles, 231 to 300 cubic inches piston displacement—

1	Marmon	Dawson	6:00 4-5
2	Cino	Donnelly	
3	Detroit-Dearborn	Ramey	

Five miles, handicap, up to 300 cubic inches piston displacement—

1	Marmon, scr.	Dawson	6:23 3-5
2	Herreshoff, :30	Emmons	
3	Cole, :20	W. Endicott	

Five miles, free-for-all—

1	Marmon	Harroun	5:23 2-5
2	Marmon	Dawson	
3	Matheson	Stevens	

Five miles, free-for-all handicap—

1	Herreshoff, :40	Roberts	5:50 3-5
2	Marmon six, :05	Dawson	
3	Cole, :20	Endicott	

Ten miles, 161 to 230 cubic inches piston displacement—

1	Cole	W. Endicott	12:50 3-5
2	E-M-F	H. Endicott	

Ten miles, exceeding 230 cubic inches piston displacement—

1	Marmon	Harroun	12:06 4-5
2	Marmon	Dawson	

Gilchrist in Stoddard and Stevens in Matheson also started but quit on account of dust.

New Carbureter on 18-Horsepower Renault Car

As reported from abroad, the new Renault carbureter as used on the 18-horsepower car, has several new features: float is used as usual; supplementary air intake has some leading features; troubles of spring control systems are eliminated; dead weight methods obtain; fluid dashpot effect is taken advantage of.

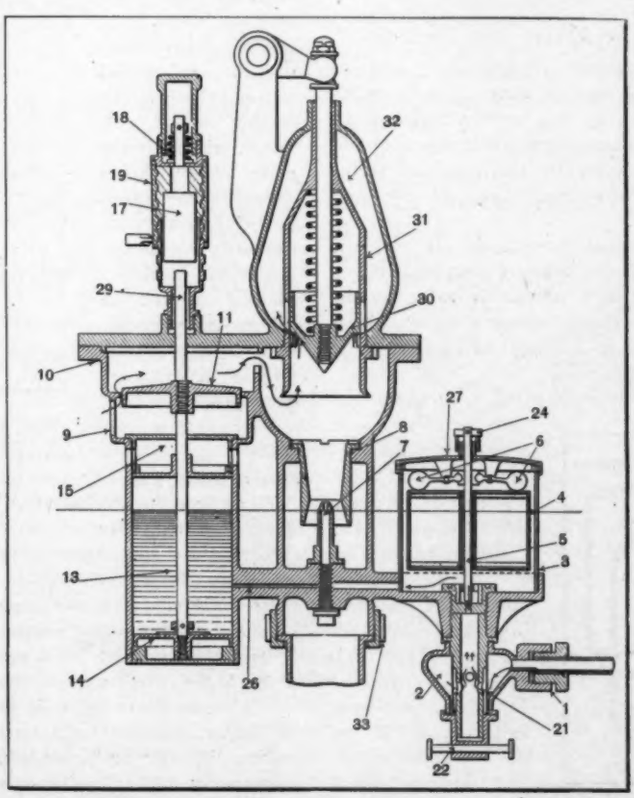
FROM the "Foreign Correspondent" comes the report of a new carbureter differing in several important features from the present model, which has just been patented by the Renault Company and adopted on the firm's 18-horsepower, six-cylinder car; it will probably later be applied to all the firm's four-cylinder models. As will be seen from the sketch, the gasoline is brought to a cone-shaped chamber 2, from which it mounts, by reason of the difference of level, into the float chamber 3, the nozzle 7 and the cylinder 13. The choke tube 8 has its diameter calculated to allow the passage of the right quantity of air for the correct running of the motor at low speed. The primary air is heated by a by-pass from the exhaust, but the supply of warm air can be shut off, whenever required, by turning the collar 33.

Supplementary air is admitted through the valve 11, forming the base of the supplementary air chamber communicating freely with the mixing chamber above the choke tube. At the lower extremity of the stem of the air valve is a piston capable of an up and down movement in the cylindrical chamber containing gasoline and communicating with the float chamber by the passage 26. As the piston meets with a certain resistance by reason of having to move within a fluid, the rapid vibrations common to spring-controlled valves are abolished. The valve opens very gradually, and is equally slow in falling back to its seat. The gasoline within this cylinder having no other object than to steady the movement of the auxiliary air valve, it is prevented from overflowing or passing in with the air by the presence of the intermediary chamber 15.

About 1-8 inch above the upper extremity of the valve stem 29 is a counter weight 17. The initial opening of the valve is, therefore, made without any difficulty, the only resistance to overcome being that of the piston within the gasoline tube. As soon as the stem comes in contact with the balance weight, however, further opening can only be made by overcoming the weight of the balance and the spring 18 to which it is attached. The weight of the balance and the tension of the spring are calculated to give a correct lift and in consequence a correct amount of air for all engine speeds. The absence of violent movement of the air valve at all times by reason of the resistance of the piston in the gasoline tube assures a constant supply of correctly proportioned mixture and a wide range of flexibility.

Throttling is now done in the upper portion of the mixing chamber and not in a separate chamber connected up to the intake manifold. The arrangement consists of a movable sleeve 30 on the lower portion of which are a number of elongated grooves corresponding with holes in the cylindrical vessel 31. The internal sleeve is mechanically operated by means of the foot accelerator, and in proportion as it is raised more of its grooves are brought into relation with the holes, allowing an increasingly free passage of the mixture to the chamber 32, and from there into the intake pipe. Control of this sleeve is by means of the foot accelerator from a position giving the slowest possible running on a level road to the maximum speed. Further throttling down is obtained by a small lever placed under the steering wheel, by means of which it is possible to cut off the supply of gas entirely, it being by this means that the motor is stopped. The only occasions on which it is necessary to use the lever is for stopping the motor or for throttling down lower than the minimum given by the foot accelerator.

For ease in starting, a small dashboard lever is fitted by means of which the counterweight 17 can be lowered until it comes in contact with the stem of the supplementary air inlet valve, thus shutting off the supply of additional air and giving a very rich mixture. As soon as the motor has been started the lever is carried over to its original position, allowing the counterweight and spring to operate normally.



Section of new carbureter on the 18-horsepower Renault

Economy in Commercial Vehicle Work

Experience as it gains force in commercial vehicle pursuits offers food for serious reflection in view of the high rate of depreciation when the speed of going is high. As an illustration of the tendency to excessive speed and its ills, it is only necessary to point out that a day or two ago a five-ton commercial car, in New York City, was stopped by a policeman, and the driver was arrested for speeding. This shows that trucks running light speed up to a point which is too high, and the question which is uppermost is how will it be possible to regulate the motor so that it will be unhampered when loaded, and at the same time regulate the speed of the car when it is running light. This is a carbureter problem, and one way is to employ an automatic throttle; but this device is prone to limit the power of the motor just when power is most required. On the other hand, if the gear ratio is increased, the car will run too slow under load, or the motor will race when the load is removed. When the standardization problem is taken up in earnest, the scale of proper speeds for loaded trucks of the various sizes will have to be constructed, but it is believed that a five-ton truck should be geared so that it will not travel faster than 10 miles per hour loaded, and a means should be provided for limiting speed to, say, 12 miles per hour when the truck is running empty.

An Unlooked-For Reason for Overheating Motors

By THOS. J. FAY.

Discusses over-heating problems of motors, calling attention to the ills of internal incrustation. Gives list of the recognized causes of power losses and heating troubles. Spheroidal condition of the water represents the special point and is introduced as new matter; this condition is described and enlarged upon.

ACCUMULATIONS within the combustion chambers of motor cylinders may be the foundation of many of the heating troubles that are experienced, but there is a class of trouble that is not to be explained away so readily. When motors go into service, and the mark of time is placed upon them, the things that the owner will have to cope with are usually stated as follows:

(A) Loss of compression due to leaky piston rings;

(B) Leakage which comes when the bore of the cylinders becomes out of round;

(C) Defective ignition following, (a) spark-plug trouble, (b) battery failure, (c) magneto imperfections, (d) spark-coil deterioration, (e) wiring deterioration, (f) lost motion in the spark manipulating mechanism, (g) poor timing, due to wear of the valve mechanism, or for other kindred reasons.

(D) Defective carburetion following, (a) poor fuel, (b) improperly adjusted carbureter, (c) lack of fuel due to low or variable pressure in the gasoline tank, as when the piping is defective, or if the pressure valve is out of order.

Fuel trouble may also be extended to include leakage of air into the system between the carbureter and the combustion chamber, due to poor joints in the intake-manifold.

(E) Pre-ignition following, (a) accumulations of carbon, silicon and ash from the lubricating oil, (b) when the temperature increases beyond the working level, due to lack of efficiency of the cooling system.

(F) The usual reasons why the cooling system fails to work satisfactorily are given as follows: (a) leakage in the pump, (b) incrustation in the radiator, (c) plugged-up piping or passageways.

Spheroidal Conditions of the Water Not Included

It is well understood that incrustation is difficult to prevent; it comes when solid matter suspended in water is precipitated as it will be if the water is heated up to a certain temperature, and even in the most perfect cooling system the temperature of the water is high enough to precipitate certain portions of the solid matter which abounds in the average water of the "potable" classification.

This condition leads to the formation of scale all over the water surfaces of the cooling system, and to some extent, on this account, all the cooling surfaces reduce in value as the crust accumulates. To discount this growing condition it is necessary to afford a liberal area of cooling surface, which is the custom among designers of skill.

But if this part of the problem is handled with skill, and judgment is given vent the fact remains that the "spheroidal" question is ignored.

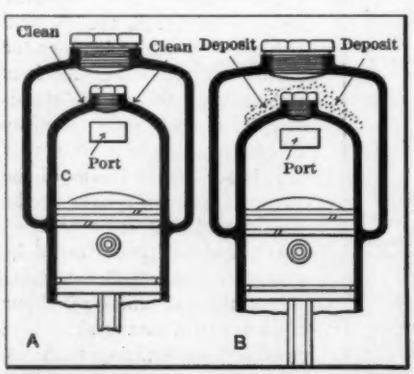


Fig. 1—Sections of a cylinder A with a clean dome, B with a deposit of scale over the dome

Referring to Fig. 1, of the exterior dome of a cylinder, just at the zone of greatest heat, (A) shows the condition as it exists in a new motor, and (B) is the condition which follows considerable service. When the motor is first put into service the exterior surfaces are clean, and the transfer of heat is at such a good rate that the spheroidal phenomenon is not manifested. In time, and as the extra heat at this point causes heavy precipitations of the solids in the cooling water, as shown in (B), Fig. 1, the exchange of heat is so much retarded that the walls of the cylinders, over the hottest part, reach a higher temperature than when the motor is new, with the consequent result that spheroidal action does take place, after which heating trouble is difficult if not impossible to avoid, and the power of the motor reduces materially, even if preignition does not take place.

What Is Meant by Spheroidal Action

When a plate is highly heated and water is then spilled upon it instead of the water contacting with the plate and absorbing the heat, the water is repelled and the plate is isolated by spheroidal fluid. The bombardment of the sheet of water by radiant heat is sufficiently fierce to prevent the water from wetting the plate, and the water, under the force of the bombardment, is broken into spheroidal particles, in which shape it floats in the space above the plate, creating a turmoil along the compacted globules, and the observer, noting this turmoil, generally satisfies his own curiosity when he reaches the conclusion that "the water sputters off of the heated surface."

That the water does not reach the plate at all, is not taken into account, but such is the case; what does transpire is that the spheroids of water float on a layer of vapor which forms between the plate and the water.

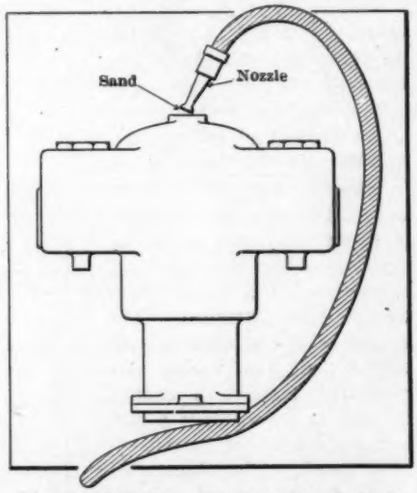


Fig. 2—Cylinder with the cap off showing the nozzle of a sandblast directed against the dome to remove scale

The temperature of the spheroidal group is below the boiling point of water, although the plate, not being cooled by the water, but being heated continuously on the opposite side, continues to heat up, and the spheroidal phenomenon is aggravated. Grease, if it coats over the surface, will excite this condition, but scale is also a prime cause.

It has been found that when a plate is overheated a spheroidal layer of water, even several inches thick, may be repelled and supported by the vapor layer which intervenes. Under such conditions the temperature of the plate may be over 1,000 degrees Fahrenheit, notwithstanding which fact the spheroidal formation of the water will be below the boiling point of water.

Remembering that solid matter is precipitated more readily at the higher temperatures than it is when water is maintained at a low temperature, it is readily explained how incrustation will be in a thicker layer on the exterior surfaces of the combustion chamber, and, since this scale will induce the spheroidal phenomenon, it is a plain deduction that, no matter how much water there may be in the cooling system, or how fast it is circulated, it will do almost no cooling work at all after the

spheriodal condition, with its consequent defects, creeps in.

In view of the premises it is possible to see how a cooling system can exist in which the water will be quite cool and at the same time the motor will be overheated.

Loss of Power Is Bound to Follow

When the cooling water assumes the spheroidal formation over the dome of the combustion chamber of the cylinders, the condition of overheating which will then be present will be manifested in loss of power; the motor will lose its ability to quick response, and its torque will fall below the proper level. The weight of fuel which may be taken into the cylinders under these conditions will be lower than when the temperature is properly adjusted, due to the increasing volume of the mixture as it contacts with the overheated surfaces, and, to whatever extent liquid fuel reaches these overheated surfaces, it will "crack" and a further deposit (in this instance, on the inner surfaces) will be accumulated. This way of reasoning leads to a very important conclusion, i. e., combustion chamber trouble, due to carbon deposits, may follow spheroidal trouble in the water circulation.

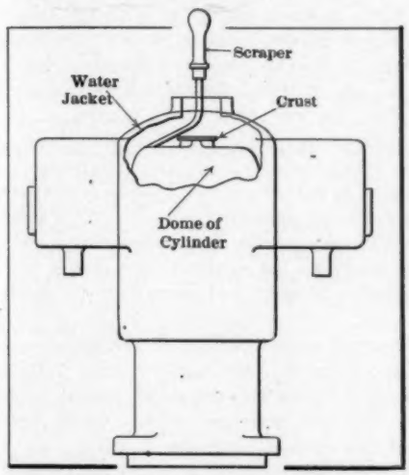


Fig. 3—Cylinder in part section with the cover off showing a scraper in position to remove scale

The remedy to apply is, of course, very simple; scrape the scale off of the exterior surfaces of the cylinder all over the portion that has flame in contact with the inner walls.

This will be possible of accomplishment if the surfaces to be scraped are accessible, as they are in one way or another in substantially every motor made. In some cases it is easier to apply the "sand blast;" in others the covers are large enough so that when they are removed a scraper may be used directly; in other designs a curved scraper may be inserted through the holes that are used for the water piping. Fig. 2 shows the application of the sand blast. Fig. 3 depicts the use of the curved scraper and Fig. 4 is a design which affords a large opening which permits of using a scraper directly and allows of inspecting the surfaces to be cared for.

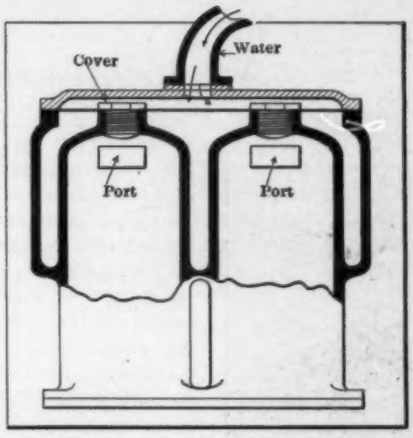


Fig. 4—Section of a twin-cylinder designed with an open jacket fitted with a cover which may be readily removed for scraping purposes

Foundry Advantage Connected with Open Designs

Disregarding the question of spheroidal action, due to accumulations over the dome of a cylinder, there is another point that is well worth taking into account; it relates to the production of cylinders in the foundry. The gases which form during the moulding process must either be permitted to escape or the metal will be defective, due to the migration of the gases through the freezing mass, after teeming. This difficulty is entirely overcome in the class of cylinders which are designed with plenty of opening such as is brought about by having covers as shown in Fig. 4. In some cylinders the openings are on the side, but in view of the possibility of trouble from spheroidal action, it would seem as if the openings might best be just where they will permit of inspecting and teeming the exterior surfaces of the dome. The cost of cylinder production is decreased if "wasters" are reduced to a minimum. This advantage is more nearly assured when the design is such as to permit of the escape of the gases.

Conditions at the French Capital Reviewed

PARIS, July 7—Automobile road races having ceased to interest, and the Grand Prix of the Automobile Club of France having come to an untimely end, the club announces the creation of a Grand Prix to be competed for in the air. In reality, there are two Grand Prix, one for aeroplanes and the other for dirigible balloons. The heavier-than-air machines must start from Issy-les-Moulineaux, at the gates of Paris, fly to the plain of Eterberck, in the suburbs of Brussels, and return to the starting point at Paris. The journey must be made with a passenger on board the machine, the two persons weighing together not less than 330 pounds, part of which can be made up by non-consumable ballast. Attempts to win the prize can be made on any day up to January 1, 1911, the winner to be the pilot who has covered the distance in the shortest time. He will receive in cash $20,000, the second fastest taking $6,000, and the third $4,000.

There is only one fixed landing place on the journey, namely, at the extreme outward point, where three hours will be allowed to fill up fuel tanks and get away again. If this time is exceeded, it will be counted in the elapsed time in the air. Landings can be made at any desired spot on the route, but as no time allowance will be made for them aviators have an interest to make them as few and as brief as possible. In a straight line Brussels is 165 miles from Paris, thus giving a total distance of 330 miles, which must be covered in not less than 36 hours. All pilots qualified by the International Aeronautical Federation are entitled to take part in the race.

The airship Grand Prix is less difficult than the task set the aeroplanes. Starting from the plain of Vincennes, on the eastern suburbs of Paris, a trip must be made to Rheims, 93 miles away, a passenger landed and taken on board again, and a return made to the starting point at Paris. No time limit is fixed for the 186-mile journey. There is only one prize, of $10,000, to be awarded to the pilot of the airship making the fastest trip from the present date to January 1, 1911. It is evident from the conditions for the two races that the Automobile Club of France has more faith in the rapid development of the aeroplane than in that of the dirigible balloon.

In England the *Daily Mail* has announced a similar competition, to be held during the month of July, 1911. A prize of $50,000 is offered to the pilot of the aeroplane making the fastest round trip of nearly 1,000 miles, starting from London and passing over the following towns: Harrowgate, Newcastle, Edinborough, Stirling, Glasgow, Carlisle, Manchester, Bristol, Exeter, Newport, Brighton, Tunbridge Wells, and London. A landing will have to be made within a certain distance of each of these towns.

Studies in Aviation Theory and Practice

By MARIUS C. KRARUP

WHEN the power has given out and the wind and gravitation are playing with the aeroplane, it is the property of fundamental stability—independent of speed and control-action—which must be depended upon for placing the machine in the proper position for a safe descent by gliding, while it is altitude—which is only another word, in this connection, for stored gravitation power—whic will give choice of landing place. It is true that, if momentum is left when the power gives out and no unfortuniate gust throws the machine around to a position where the momentum becomes useless as a basis for control, and if the aviator is quick enough of decision to make use of this momentum, then he can utilize it by means of his tilt-rudders so as to assume the tilt at which gravitation will take the machine down in safety, even if its stability has not been nicely calculated, but in practice a number of aeroplanes have been known to go over backward, helplessly, under conditions which were reported to be by no means unfavorable, so far as the force and regularity of the wind were concerned. Probably the art of instilling stability in aerial craft will long remain subject to judgment and skill, rather than to definite and scientific rules, because all exact data are as yet lacking with regard to the degree of stability that is desirable and also with regard to the effects of wind action which attacks the surfaces of the machine at irregular angles, but it seems to be established, in accordance with the foregoing, that the natural stability should be of such nature that the machine suspended in a calm atmosphere, without motion in any direction—if this may be imagined—would have its planes pointed for a glide or perhaps a little more downward. This also seems to be acknowledged in the more advanced position given to motor and propeller in recent European machines, which were previously especially liable to the backward tumble.

With a control apparatus permitting changes in the tilt of the main plane or planes, with relation to the bulk and load of the machine, the central or rest poise of stability could probably be more nearly horizontal, as it would be in the aviator's power to give the planes the gliding tilt by control action, whether rudder action had ceased to be effective or not.

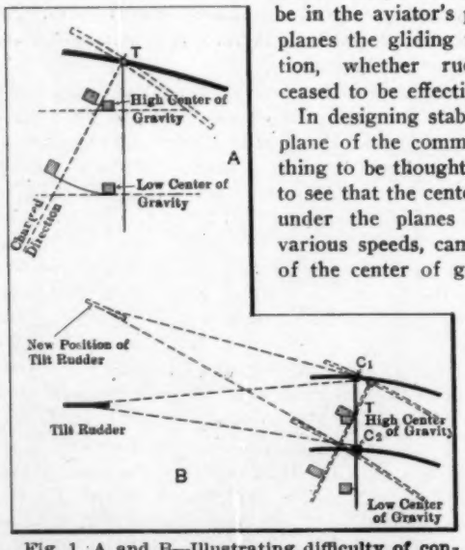


Fig. 1, A and B—Illustrating difficulty of control with low center of gravity, A in monoplane, B in biplane

In designing stability into an aeroplane of the common types, the first thing to be thought of would now be to see that the center of air pressures under the planes during flight, at various speeds, came so far in front of the center of gravity of the machine, as a whole, as to lift the latter from the gliding to the flying poise. (It is very fortunate that speed does advance the center of sustentation.) The next consideration would perhaps be to determine how low the center of gravity might be placed without giving too much work for the rudders in effecting or maintaining a change of direction, and, as data are missing and rudder efficiency depends largely upon speed, the designing would needs be entirely empiric.

In Fig. 1, *A* is indicated the action of changing direction with a monoplane. *T* is supposed to represent the transverse axis of air pressure under the plane, and the motion practically takes place around this axis, as the whole machine is suspended from it. It is readily seen that, for a given deviation, as indicated by the dotted line, the low center of gravity must be moved and raised more than the high center of gravity. And the condition would not be different, so far as the effort of the control movement is concerned, if the new direction were downward instead of upward, as in the sketch. Fig. 1 B indicates the condition with a biplane. Here there are two axes of air-pressures and support, C_1 and C_2, and the machine is turned around *T* midway between them. The action is practically determined by the tilt rudder moving upward, and the difference in the sensitiveness of a given control apparatus, accordingly as the center of gravity is high or low, is even more pronounced than in the case of the monoplane.

The weak control resources in the customary machines, both biplanes and monoplanes, seem to leave small chance for increasing stability much by lowering the center of gravity without interfering strongly with the efficiency of the control apparatus, but in practice it has become desirable to carry two or three persons occasionally, and this involves a considerable lowering of the center of gravity, in nearly all instances, and consequently, there has been witnessed a steady increase in the sizes of the control areas, particularly those of the tilt rudders, which bear the brunt of the work of shifting a low center of gravity into a new position. Preferably a load which is not always carried should be placed so as to leave the height of the center of gravity unchanged, as in this manner the efficiency of the control movements will be least affected.

The most difficult problems with regard to the stability enter in the consideration of the surfaces. To place these so that they normally afford sustentation and at the same time so that a disturbing wind action, which changes their positions, will get a poorer rather than a better purchase upon these surfaces the more they are turned from their normal angles, is a practical problem which it does not seem possible to illustrate in any other way than by analogies and examples. But it seems clear, to start with, that a good stability is not consistent with any arrangement by which a disturbing influence which causes the machine to be tipped to one side, by this very tipping gains a stronger disturbing influence; and it seems equally certain that the location of the center of gravity in relation to the various surfaces must be so low that no tipping will cause gravitation to work against the resumption of the normal poise.

The supposition in this article is constantly that only the fundamental stability which acts independently of speed and control action is referred to. Fig. 2 illustrates the basic ideas with which the designer has to do his thinking. *A* is a hollow sphere of light weight. Falling in the atmosphere, it eventually reaches a speed at which the air resistance equals its weight. It can fall no faster. *B* is another hollow sphere of the same diameter and surface as *A*, but heavier, say four times heavier. Falling, it can reach twice as high a speed as *A* before the air resistance will stop further increase of its speed, because doubled speed creates a four times higher air resistance. The relations are indicated approximately by the arrows and dotted horizontal lines. Both these spheres may fall without turning around. *C* is a hollow sphere, heavier on one side than on the other. The heavy side *w* will tend to fall faster than the light side *a*, the

air resistances, which depend on the surfaces, being equal, and *C* will therefore reach its constant falling-speed in the position of *C2*. Its equilibrium is upset, compared with the position of *C*. In reality its true equilibrium has been found. *C2* has natural stability, while *C* has not. Yet *C* may be propelled through the atmosphere in the direction of *a-w* and remain in equilibrium so long as the horizontal speed is maintained, but no longer. *D* is like *C*, except that an area *a2* which creates air resistance has been added on the heavy side *w*. In what direction this body will fall, and how far it will fall before its speed reaches its maximum, and in what position it will then be, depends upon the air resistance created by *a2* in the various positions which this area member may assume under the influence of the gravitation of *w*. A curvature or concavity in *a2* may considerably affect the position which *D* will finally take.

With the aeroplane, whose relations between weighty and surface portions is much more complicated than those of *D*, it is necessary, however, to know in advance that the poise of the machine in the air will remain one in which the aviator can keep his seat and also to know the maximum vertical speed at which the machine can fall in any position which it may assume. Perfect stability should probably involve a choice of going down vertically as an unfolded parachute, save for such deviation from the vertical as the wind may cause, or obliquely by adding a control movement of the surfaces.

Colonel Renard found many years ago by experiment that a hollow hemisphere moved with its hollow squarely against the air at a certain speed met a resistance of 109 as compared with a resistance of 33 when moved with the convex surface foremost, and it has since been ascertained that the same body moved obliquely, as illustrated in Fig. 3, meets a total resistance which at some angles is higher than 109 with the hollow foremost, while it is always less than 33 with the convex side foremost.

Much more elaborate experiments with plane, concave and convex surfaces and bodies have furnished some data which further complicate the problem of automatic stability in the wind with fixed surfaces, while supplying the thought-material from which control surfaces must be designed.

Comparing A and B in Fig. 4, in which A represents a monoplane in front view, edge view and with the lateral equilibrium

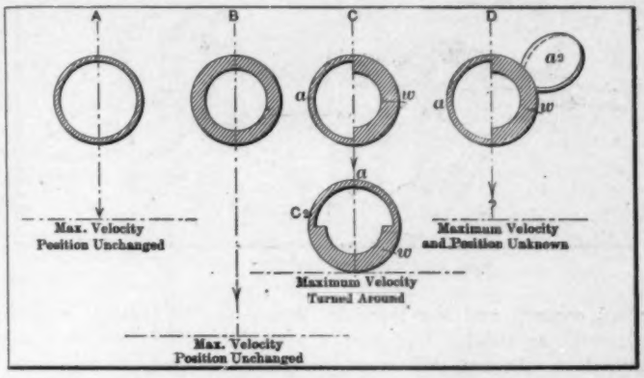


Fig. 2—Illustrating principle of automatic stability in the air

disturbed, and B a biplane in front view and with the lateral equilibrium disturbed, it is seen at once that the heavy portion *w* in A has a better chance for returning to its normal position than *w* in B, the small circle representing the center of gravity.

In both cases it is a drawback that the gust, from the side and a little from below, which has caused the disturbance, gains in upsetting power when the plane's angle with the direction of the wind is increased, until a maximum effect is reached at an angle of about 25 degrees, which is not a comfortable lateral tilt for the aviator. And the lateral stability is under these circumstances the opposite of progressive. As the machine is normally advancing in space at the same time, the biplane will seldom get an advantage in this respect by having the lower plane taking the wind from the upper one, and altogether it seems difficult to find a remedy without having recourse to control or introducing elastic elements in the planes which will change their shape automatically under the influence of the surplus lift which causes the disturbance. In C the so-called dihedral angle is introduced in the biplane and, if the wings with this design were held normally at angles approaching that which gives maximum power to the disturbing side wind, the disturbance would at least not gain in severity by its own action.

(To be continued.)

Testing Steel—For Impact, Bending, Etc.

By BERTRAM BLOUNT, W. G. KIRKALDY and Capt. H. RIALL SANKEY

(Third Installment)

Detailing the arrangements for measuring the time-interval between the anvil and bottom contacts in subjecting specimens to breaking tests; also explaining the machine and the manner of carrying out the repeated-bending tests.

IN THE breaking of the specimen the energy absorbed is determined by the expression:

$$\text{Energy absorbed} = W\left\{H - \frac{1}{29}\left(\frac{h}{t} - \frac{9t}{2}\right)^2\right\}$$

where H is the height of free fall before striking anvil;

h is the height of free fall after striking the anvil, *i. e.* between the anvil contact and the bottom contact;

W is the weight of the tup; and

t is the time-interval between the anvil and bottom contacts.

The arrangements for measuring the time-interval are as follows:

Easily opened switches are placed at *a* and *b*, Fig. 2, and complete an electric circuit. As the front edge of the tup passes these switches they are momentarily opened and the circuit is broken for a very small fraction of a second. A recording pen, marking a continuous line in a paper band, Fig. 4, Plate 1, is thereby deflected, and the distance between these two "deflections" is a measure of the time-interval. The paper band is unrolled by means of an ordinary Morse telegraph "inker," altered so as to get a much more rapid unrolling of the paper; 5 inches a second has been found to be a suitable speed for the paper. A second recording pen, vibrating at about 40 per second, marks a "corrugated" line, but to calibrate these corrugations and to obtain an absolute standard, half-second marks are recorded by means of a half-second pendulum—which was compared by Mr. G. P. Mair with the pendulum of a clock whose rate is 2 seconds per month. A fac-simile of a record is given in Fig. 5, and it is computed from numerous observations of free fall that the error in the time interval measurement is less than 0.005 second.

The method of making a test with this impact testing-machine is as follows: The test-piece having been fixed into the grips, thus connecting the cross-arm and the tup together, the whole is hoisted up and fixed to the stretcher by means of the releasing catch. The paper band is then started and so soon as the speed of the paper is constant (which requires a few seconds) the catch is released, and at the moment of release the electric circuit of the recording pen is opened and the first time record is marked on the paper. Immediately after breaking the test-piece the second time record is marked by the opening of the

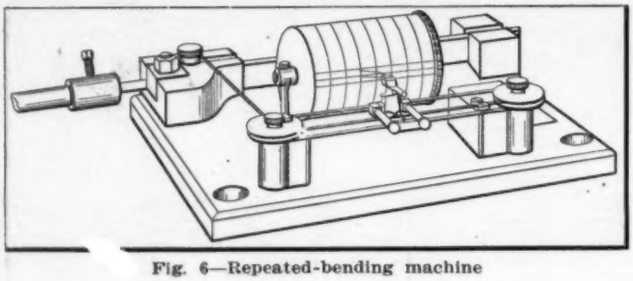


Fig. 6—Repeated-bending machine

anvil contact, and the third by means of the bottom contact after falling another 10 feet. In a similar manner the time required for the free fall from the point of release to the anvil can be determined and a check is thus obtained, as this interval of time should be equal to the time of free fall in air due to the action of gravity.

The degree of accuracy obtainable in the measurement of the energy absorbed by the specimen is mainly dependent on two things, namely, (*a*) on the ratio of the kinetic energy remaining in the tup after breaking the test-piece to that it possessed at the moment of striking, and (*b*) on the error in the measurement of the time-interval in falling the distance *h* (10 feet) beyond the point of rupture. The matter was investigated and an abstract of this investigation is given in the Appendix (page 30). It need only be mentioned here that the percentage error in the determination of the absorbed energy will be about half of the percentage error in the time measurement, if the remaining energy in the tup does not exceed two-thirds of the energy in the tup at the moment of striking the anvil. With an unknown specimen, however, a considerable margin must be allowed to ensure breaking the specimen with one blow, and it may be, therefore, that the proportion of energy remaining to initial energy may be considerable, and then the percentage error in the determination of the absorbed energy will be greater than the percentage error in the time-measurement. It should be noticed also that if the remaining energy is very considerable the percentage error in the absorbed energy would be excessive, but in practice a rough estimate of the strength of the specimen can be made so as to avoid such errors. If several similar specimens are to be broken, the weight of the tup or the height of fall (preferably the former) can be adjusted after breaking the first specimen. Based on general consideration and as the result of some preliminary trials, a height of drop of 30 feet was adopted for these tests.

Capacity of the Machine.—The machine has been so designed that a 40-foot drop with a 20-lb. tup can be used. The available striking energy is therefore 800 foot-lbs., and this energy is sufficient to rupture a steel test-piece ⅜ inch in diameter.

Repeated-Bending Tests

The repeated-bending machine used in these tests is shown in Fig. 6, Plate 1, and it automatically records the number of bends and the bending effort of each bend. The test-piece is 4 inches by ⅜ inch diameter, and one end is fixed in a grip carried by a flat, steel spring, the other end is inserted into a hole in a lever and is secured by a cup-ended screw. This lever is 3 feet long, and by its means the test-piece can be bent backwards and forwards. When a force is applied to the lever the first action is to deflect the flat spring, and this deflection will increase in amount until the test-piece begins to yield, after which there will be no further deflection of the spring and the test-piece will be bent. The bending is continued until the maximum angle of bend is reached, which has been chosen as 46 degrees after much preliminary work. The direction of bending is then reversed, and the flat spring is deflected in the opposite direction. The bending of the test-piece is continued beyond the original central position until an angle of 46 degrees on the opposite side is reached, then the direction of bending is again reversed. This process is continued until rupture occurs.

The grip at the end of the flat spring is connected by a wire and a multiplying arrangement to a recording pencil carriage working on guides. The wire attached to this carriage is kept taut by a spring placed in a circular box. The motion of the pencil is recorded on a paper placed around a drum and is proportional to the deflection of the flat spring, and therefore, obviously, to the bending effort. The drum is under the action of an internal spring and rotates a definite distance each time a bend is started from left to right, and in this manner the number of bends is automatically recorded as shown in Fig. 7, which is a fac-simile of a record. The papers are ruled with lines giving the bending effort expressed in lb.-feet. One bend is reckoned as bending from the extreme position on the right to the extreme position on the left, or vice versa. Hence, the first line of the record, namely, AB, Fig. 7, which is drawn whilst the test-piece is being bent the first time from the central straight condition to the extreme position on the left, represents only half bend. Since the distance between the lines representing the record of the bends is proportional to the distance travelled by the bending force, the energy required for one bend is obviously represented by the rectangle drawn to the left of each line, as AEDC, for example. For AB, however, the rectangle is only half the width, since this line represents only half a bend. The test-piece generally breaks before completing a bend, and a graduated quadrant is provided to measure the amount of the last bend expressed in tenths of a bend. Hence, the rectangle representing the energy of the last bend will have a width the same number of tenths of the full distance between the lines, as shown by rectangle GHKL. Finally, the total energy required to break the specimen is given by the area included within the dotted line, Fig. 7. In the original record one square inch represents 400 foot-lb. of energy, so that it is easy to calculate the energy, expressed in foot-lb., required to break the test-piece.

Fig. 8 shows nine records of Repeated-Bending Tests, reduced half-size.

Results of the Tests

The average of the principal observations are given in Table 1, and it will be noted that two sizes of tensile test-pieces are quoted for each type of steel—the dimensions of the small test-pieces are the same as those of the impact-tensile test-pieces. In the case of steel for tires (Item No. 12) there are three sizes of test-pieces—that having a diameter of 0.564 inch being the standard size. It will further be observed that in general the tensile results are higher for the small test-pieces than for the large, which is probably due to the metal in the smalled test-pieces being more worked, having been taken from a position nearer the skin.

In the impact-tensile tests the means of the observations on three test-pieces are given. As regards the energy absorbed by the rupture of the test-piece, which is the important measurement in this test, the readings agree fairly well, the average disparity from the mean being about 6 per cent., but in a few cases the disparity is as much as 12 per cent., possibly owing to the position in the material from which the test piece was taken.

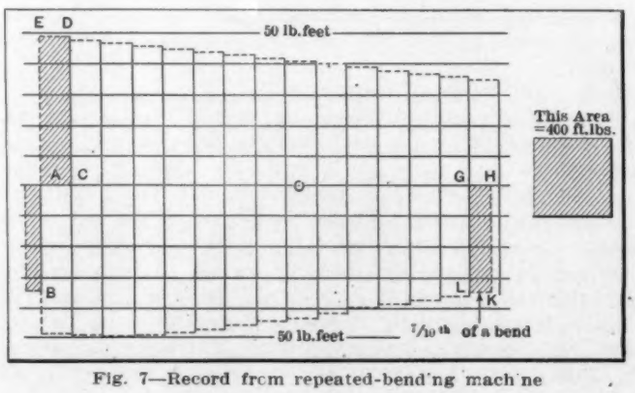


Fig. 7—Record from repeated-bending machine

Rejuvenating the Old Automobile

By G. J. MERCER

Illustrating a remodeled Buick, changing the old touring body to a new fore-door type, showing enough details to permit a body maker to do the work and specifying the character of the materials required, also the methods of procedure necessary to complete a first-class job, with some timely hints as to finishing.

THIS undertaking involves a Model 17 Buick, using the old body with just enough alteration to permit of the addition of the fore-door, changing the dash in order to make the front finish agreeable to the eye, and to give room for the wing of the door. Fig. 17 is a side elevation of the car, showing the flare of the mudguards and the manner of their installation for the purpose of protecting the body from picked-up mud, also the running board and the metal work between it and the body sill. Fig. 18 shows the new fore-door, and the dotted lines are for the purpose of telling the workman how to frame the same. Fig. 19 is a front elevation showing the shape of the radiator and dash, also the outline of the body back of the dash. The aluminum panel, the metal of which is No. 16 gauge. The moulding is continued around to the point *A* on the panel edge; it joins the moulding on the seat. In Fig. 19 the hooded dash is shown, and its relation to the hood or bonnet is indicated. The corners of the dash hood are slightly rounded at the front. This rounding ends at the front of the door, and the right side is framed in the same manner as the left, making allowance, however, for the cut of the door on the left side only. The change levers, as shown in Fig. 19, must be bent out slightly to give clearance at the top, but the bending should be done at a point near the quadrant, leaving the levers straight from the point of bending out to the handle. The door opens from the back, the

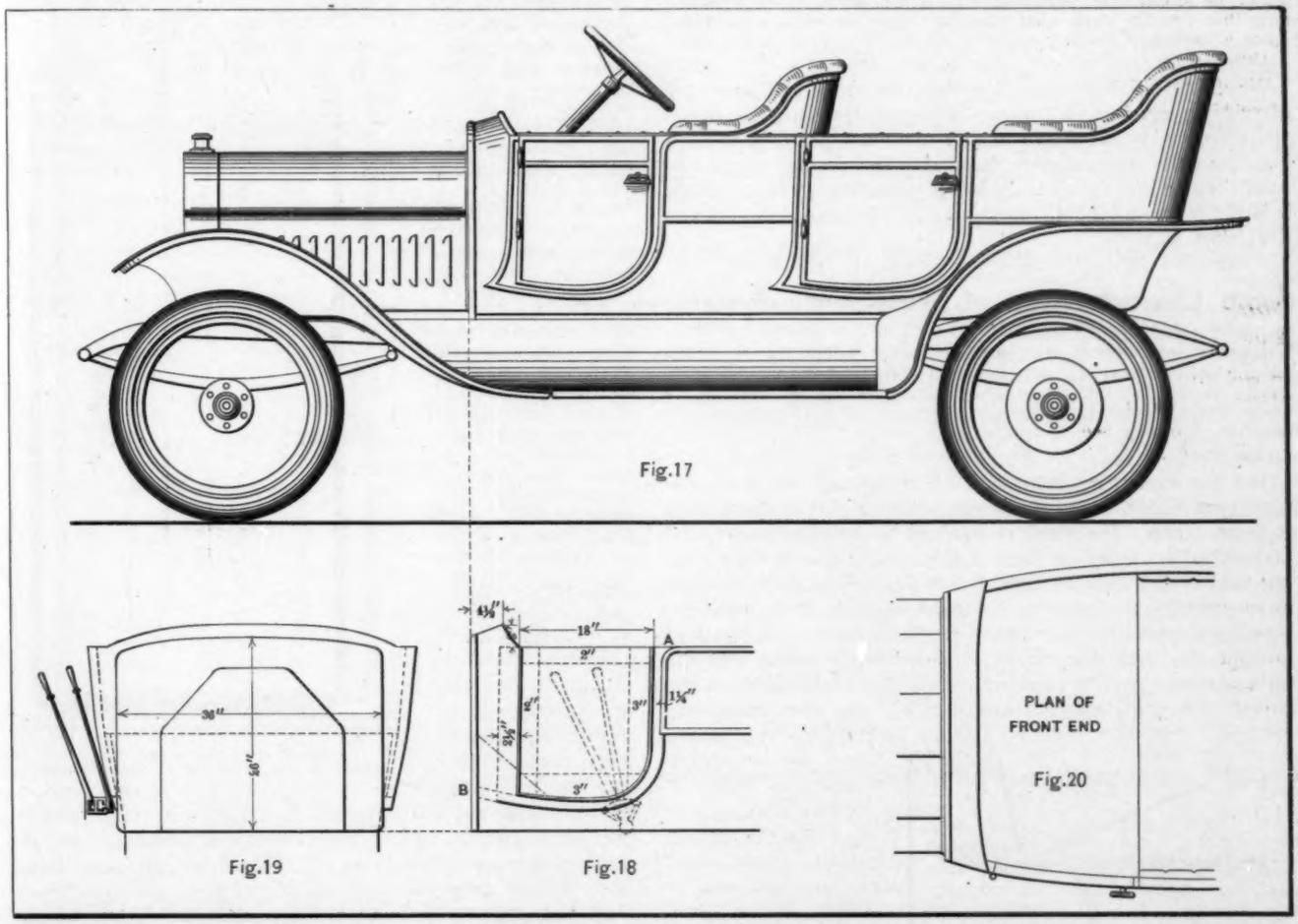


Fig. 17—Model 17 Buick, with new fore-door type body replacing old touring style. Fig. 18—Detail of new fore-door. Fig. 19—Front elevation. Fig. 20—Plan

side levers come to the outside of the body line, the quadrant being quite high up, and so far out from the face of the chassis frame that it becomes desirable to bring the levers to the outside. Fig. 20 is a plan of the front end of the body from the dash line to a point back of the fore-door.

The left fore-door corresponds in shape with the rear door on the side view, but the right side is merely provided with an imitation door; the levers being in the way would prevent a door from swinging out. It is optional with the owner to have the fore-door permanently hinged or to so swing it that it may be detached during periods of fine weather. The pillar effect at the front of the door is formed by moulding riveted to an swing being high enough up to prevent interference with the mudguards, and the hinges, as well as the handles, should be selected to conform with the style of fittings used on the old body.

The amount of work required to bring this body up to the new style as shown is very limited, and it is reasonable to expect that the alterations could be carried on in a repair shop of no great pretense. With the body work completed, it would be proper to have the same removed to a finishing shop, with a view to having the old part of the body prepared for painting, so that when the new finish is applied, the appearance would be uniform over all of the surfaces.

Superstructure Too Close—Damages Tires

Editor THE AUTOMOBILE:

[2,324]—I wish to complain about the careless manner in which bodies are put on to the chassis frame. In my car I found that in going over "Thank-you-marms" the body comes down onto the axle, but the clearance between the body and the axle is less than the clearance between the tires and the mudguard. I have since put rubber bumpers on the top of the spring perches to prevent the body from coming down so far, but I think this detail in automobile designing should be given some attention now that makers claim that they have put automobile designing upon a standard basis. READER.

Akron, Ohio.

We do not think that the tires were cut in the simple process of rubbing, which is all that would happen under the conditions you name, unless, as shown in Fig. 1, the mudguard bolts come just at a point where the tread contacts, and the protruding bolt tears the tread of the tire. In bringing out the point you make, it is the purpose here to add this additional information, which was taken from life.

Some Characteristics of Wipe-Spark Systems

Editor THE AUTOMOBILE:

[2,325]—I understand the performance of jump-spark systems of ignition, and how the voltage grows until it becomes sufficiently strong to leap across the contact points on the spark plug. I would like to know, however, the difference between this and the condition involved in wipe-spark work. M. A. E.

Chester, Pa.

The low-tension magneto, as used in the type of ignition to which you allude, is not designed to deliver a sufficient voltage to jump a gap. The spark is obtained by drawing an arc, and the method in vogue is illustrated in Fig. 2, which shows the arc light carbon pencils A, B, C and D, just as they are used in an ordinary arc lamp for street lighting. At A the two carbons are separated about 1-8 of an inch. When it is desired to light the lamp, the circuit is closed by a switch and the carbons come together, as shown at B. This operation closes the circuit, and the electrical current is set up, after which the carbons are pulled apart by an electro magnet, as shown at C, thus drawing the arc. As the carbon pencils waste away the arc increases in length and assumes the appearance as indicated at D. It is a fact that while the low voltage will not jump a gap, it will nevertheless draw out for quite a long distance, if the contacts are first made and then separated. The current, as it flows across the gap, as it is increased in length, casts off minute particles of the conducting material, forming a gas, the resistance of which is very much lower than the resistance of an air gap. In the wipe-spark system of ignition this principle is taken advantage of, with the result that the energy in the spark is very high, but the voltage of the magneto does not have to be more than probably 125 volts maximum. It is claimed as an advantage of the low-tension wipe-spark system that it affords a high-energy spark, and a low voltage with which to cope from the insulation point of view. It will be understood, of course, that if the insulation of the system breaks down, the service will be interrupted.

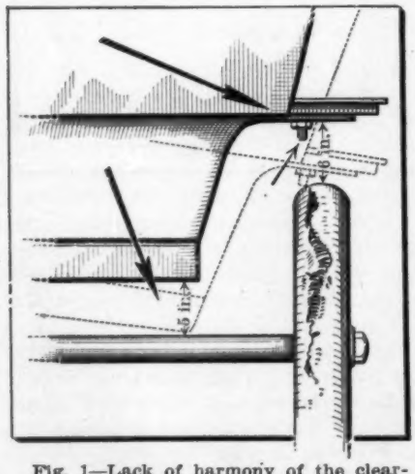


Fig. 1—Lack of harmony of the clearance relations, there being too little between wheel and mudguard

Looking Around for a New Type of Battery

Editor THE AUTOMOBILE:

[2,326]—In order to obviate the necessity of having to deal with troublesome acid solutions as they are used in certain types of batteries, it is my understanding that dry cells are given preference by many autoists. In counting the disadvantages of these types of batteries, it is not too much to say that it is quite an undertaking to carry them to some place for the purpose of having them charged when the occasion requires, and in view of their characteristics they seem to require charging at least once or twice during a season. The dry batteries offer their own character of trouble in that their capacities are relatively limited, and I have in mind the idea of building a primary battery of some kind, one that I can charge myself by simply emptying out the depleted solution and replenishing the cells by no more troublesome a process than adding chemicals and perhaps water. Will you please give me an inkling of the possible success attending an effort such as this?

IMPROVER.

Little Rock, Ark.

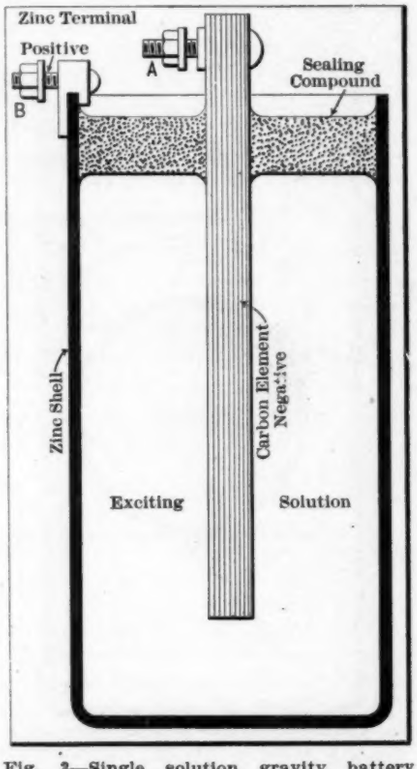


Fig. 3—Single solution gravity battery which is the principle of the dry cell

Local action stands in the way of success with almost every form of primary battery. Fig. 3 shows the dry-cell type of battery in section, with a zinc shell and a central carbon element immersed in the exciting solution. This excitant, instead of being in liquid form, as sal ammoniac and water, is in a semi-hard state. With this type of cell, considering the use of depolarizer, local action is reduced to a negligible quantity, which condition is influenced through the use of pure zinc. Any attempt to depart from this type of cell in the direction of primary batteries leads to local action sufficient to destroy the possibilities, excepting in the types of cell using double solutions and a porous cup between, as shown in Fig. 4. With two exciting solutions, using zinc and copper as the electrodes, if a porous cup intervenes, it is possible to obtain very good results, but it has not been shown thus far in ignition work that a mechanical structure can be improvised, the nature of which will make it fit to withstand the jolting it would receive on an automobile. In Fig. 4, if zinc and copper are used as electrodes, solution A would be sulphate of copper, and solution B sulphate of zinc.

Effect of Weight on Life of Motors

Editor THE AUTOMOBILE:

[2,327]—Will you please answer through your columns, the following inquiry, if possible, citing authorities on the subject. Does the weight of pistons or connecting rods bear any relation to the liveliness or lagging of a 4-cylinder motor of say, 4 1-2 x 4 1-2 cylinders? R. J. G.

Lansing, Mich.

It would seem to be a waste of time to look up authorities on the subject of the effect of weight on acceleration. If the piston and connecting rod in the cylinder of a motor are very heavy, since it is true that the mass will have to be accelerated, it stands to reason that more force will have to be exerted in the process, or with a given pressure, more time will have to be allowed.

Automobiles with Counterbores in Cylinder

Editor THE AUTOMOBILE:

[2,328]—Will you please advise me through the columns of "The Automobile" if there are any automobiles made which have counterbores in the cylinders. Why is it that all good automobiles do not have counterbore cylinders?

WILLARD S. REED,
Smyrna, Kent Co., Del.

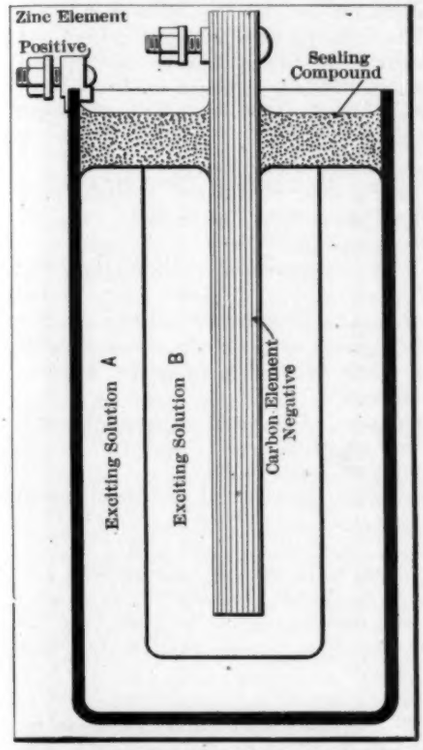


Fig. 4—Double solution cell of battery requiring use of a porous cup to limit local action

Nearly every automobile motor is provided with a counterbore at the top of the stroke, so that when the piston reaches the dwell point, the top ring will rest partly on the relieved portion. In steam engine practice, the counterbore is very pronounced, but in automobile work it sometimes amounts to but a few thousandths of an inch, which difference is brought about in the grinding process. It is not necessary to have a considerable counterbore; the good effect will be present with a difference of a film of oil, but enough for one reboring should be present.

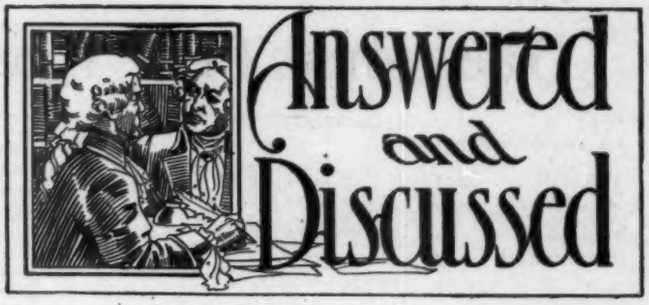
Oil Testing Fraught with Uncertainties

Editor THE AUTOMOBILE:

[2,329]—I am a subscriber to "The Automobile," and would like to ask you through "Letters Interesting" what tests good lubricating oils for water and air-cooled gasoline engine should show, and a simple, sure, and satisfactory method of how to test lubricating oil. All dealers in lubricating oils claim to have the best and only good lubricating oil, and it is so bewildering to the novice that he is at a loss to know what lubricating oil to purchase and use; he is in the dark as to what kind of lubricant to use for his car.

Buffalo Lake, Minn. F. G. NELLERMOE.

It is not believed that an autoist can make any headway testing lubricating oils with a view to proving which of the brands offered by oil merchants are best for automobile work. The plan which would seem to be free from difficulty is to purchase the oil from absolutely responsible distillers, in the original package.



Liquids Will Spill Out of a Receptacle

Editor THE AUTOMOBILE:

[2,330]—I have been reading your "Letters Interesting Answered and Discussed," and get a great deal out of them. I have an 1910 Overland, Model 38; it leaks oil around the brake band and I have tried every way to stop it. The oil comes from the differential. I have packed it several times with felt washers, which stops the leak temporarily. If you can tell me any way to fix it I will appreciate it. B. W. SELF.

Crowell, Texas.

If a half barrel is placed under the spigot and water is allowed to run until the same is filled, and then for a time, the excess of water will pour over the sides and wet everything that happens to be within contact distance. In the same way, if you put too much oil into the differential case the excess will spill out. Anyway, a small quantity of a good grade of semi-hard lubricant will give you less trouble and do the work.

No Sense in Comparing Unlike Things

Editor THE AUTOMOBILE:

[2,331]—I should like to know if the power of a 6-cylinder motor, of say 30 horsepower, is greater than that of a 2-cycle engine of the same power; also if a 4-cylinder motor of the 4-cycle type is superior or inferior in power to that of a 2-cycle, or are they equal? It is claimed for the 2-cycle motor that the continuous torque gives it the same advantage as that obtained from a 6-cylinder motor.

Buffalo, N. Y. E. L. L.

It is highly improbable that there is any way of satisfactorily comparing the performance of a 6-cylinder motor with that which might be expected from a 2-cycle motor which gives the same number of power strokes for a given number of revolutions. There is nothing to be said in favor of the statement that a 2-cycle motor giving 30 horsepower is any better or worse from the power point of view than a 4-cycle motor delivering 30 horsepower. There might be differences involving flexibility, ease of starting, and dependability, but these differences might also be charged to design features which do not have to be adhered to on an equal basis.

Gasoline Consumption Proportional to Power

Editor THE AUTOMOBILE:

[2,332]—Will you kindly advise me, giving reasons, whether a Buick No. 10 will consume more or less gasoline at 10 miles per hour for 10 miles than at 35 miles per hour for 10 miles. I suppose the same solution will apply to any automobile, but a Buick No. 10 is the model under discussion.

W. P. C.
Cincinnati, Ohio.

Since the power required to drive an automobile at 35 m.p.h. is greater than that for 10 m.p.h., the gasoline consumption will be greater when the car is driven 10 miles at a rate of speed of 35 miles per hour.

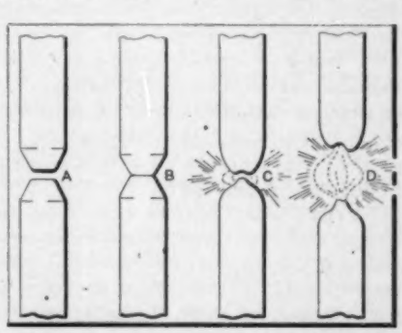


Fig. 2—Arc-light carbons, showing how the arc is drawn

Questions That Arise—General in Scope

Thermal efficiency is improved with high compression; too much fuel leads to indigestion; power is proportional to actual fuel burned to carbonic acid and water; carbonic oxide is representative of waste; limit of compression depends upon method of use of fuel; air must be increased as fuel burned is added to; mechanical equivalent of heat is given.

[165]—What are the advantages of high compression in a motor?

The rate of combustion is more rapid with increasing compression; this has the advantage of aiding in the accomplishment of the useful work within the shortest possible time, and, since the losses increase as the time taken, it follows that the thermal efficiency is better with the higher compression. Again, since the source of all the power of a motor is the fuel value of the mixture, it follows that the more fuel there is in the cylinder for each power stroke the more power the motor will be capable of delivering, provided the motor is not given a dose of "indigestion" by using too much fuel. Increasing compression results in an increased amount of fuel in the space each time, and, since the combustion conditions are bettered by this increase of compression, it is a fair inference that the superior compression does two things, i. e., it packs the space with a higher weight of fuel, and the conditions for burning the fuel are improved.

[164]—Why does increasing the compression add to the weight of fuel?

When earth is rammed around a fence-post to compact it, or when a road roller presses the top coat to a firmer state, the "tamping" process with the post, and the rolling process on the road, are precisely the same in principle as that which takes place when fuel mixture is compacted into a cylinder. There is no difference excepting that it is easier to compress a flexible medium as "mixture" than it is to compact the less amenable clay.

[165]—Are there not some differences to be noted in motors of different makes?

Yes; there are two principles involved in accounting for the good effect of compression. In the "idealized" Otto cycle (4-cycle principle) mixture is drawn in at the atmospheric (or slightly below) pressure, so that the weight of fuel is fixed by the suction stroke; if the suction is at a minimum depression, provided the cylinder fills with gas, the weight will be maximum at a given temperature; if the temperature is lowered the weight of gas will be increased. In the remaining method, instead of "inspiration" on the Otto basis, mixture is put in under separately generated pressure, and the amount of pressure utilized is independent of the suction ability of the piston of the motor.

[166]—What is the limit of compression, and is it the same in both types of motors?

The limiting considerations are not the same in both types of motors. In the Otto cycle, the weight of fuel (total) depends upon the suction ability, but the weight of fuel in the combustion chamber at the instant of ignition (neglecting leakage) depends upon the ratio of clearance space. In this class of motor it is pre-ignition that places a limit on compression, hence upon the weight of mixture in the combustion chamber at the time of ignition. When auxiliary compression is resorted to, provided the fuel is injected separately just before ignition, there is no such limit to place upon compression; it may be as high as mechanical considerations will admit of, unless it is found that lubricating considerations must receive earlier attention.

[167]—Is it necessary to allow more air in proportion to fuel as the compression is increased, or should the air allowance be maintained on a constant basis irrespective of the compression?

As compression increases, so must the air allowance be increased above the theoretically right measure; this is due to the fact that the fuel has less time in which to hunt around for an oxygen mate; it must have its mate if combustion is to take place; it is more likely to find its affinity if an excess of oxygen is present.

[168]—What is the underlying reasoning for this?

Energy resides in carbon, hydrogen and compounds of these elements, as in the hydro-carbon distillates of which automobile gasoline is composed. How to release this energy under advantageous conditions is the problem. This is accomplished by compressing the fuel with a quota of atmospheric air in which oxygen, which is wanted, is a content in the right proportion. The energy in the fuel is set free by combustion, and this condition (combustion) is brought about by mixing the carbon and hydrogen with oxygen, then setting fire to the new mixture.

[169]—What happens when carbon, hydrogen, and oxygen are thus mixed and burned?

The energy residing in the carbon and hydrogen is set free, and the products of combustion are carbon dioxide and carbon monoxide, also water. The carbon monoxide is not desired, but it is formed to some extent owing to the difficulty of supplying the oxygen in such form that it will be taken up by the fuel elements. For complete combustion, then, the final product will be carbon dioxide and water.

[170]—How much energy is there in this fuel?

Automobile gasoline, taking it as an average product, holds about 20,000 British thermal units of heat per pound.

[171]—What is a British thermal unit?

It is accepted as a definite measurement of heat, the latter being a form of energy.

[172]—What is the magnitude of a British thermal unit of heat?

It is that amount of heat which will raise the temperature of one pound of water one degree Fahrenheit, taking the water at its point of maximum density.

[173]—What other way is there for judging the magnitude of a British thermal unit of heat?

It has a mechanical equivalent.

[174]—What is the mechanical equivalent of a British thermal unit of heat?

778 foot-pounds.

[175]—How is this knowledge to be utilized to advantage?

One horsepower is said to equal 33,000 foot-pounds per minute: knowing this, also knowing the foot-pound equivalent of the British thermal unit of heat, it remains to compare one with the other.

[176]—Give an example.

If there is 20,000 British thermal units of heat in a pound of automobile gasoline, and 778 foot-pounds (mechanically) in a British thermal unit it follows that

$$\text{H.P.} = \frac{20{,}000 \times 778}{33{,}000} = 472;$$

this amount of power would be given for one minute; in one second 60 times this power would be the rate.

[177]—What is the specific heat of the fuel elements in gasoline, considering air separately and assuming that there will be a certain amount of carbon monoxide in the mixture?

SPECIFIC HEAT VALUES OF SPECIFIC HEAT OF GASES

Elements	Specific Heat for Equal (Regnault) Volume	Weight
Air	0.2375	0.2375
Carbon monoxide	0.2370	0.2450
Carbon dioxide	0.2985	0.1952
Hydrogen	0.2359	3.4090
Nitrogen	0.2368	0.2438
Oxygen	0.2405	0.2175
Steam	0.2989	0.4805

The amount of steam present will be limited to the weight of water, (a) entering the cylinder as such, and (b) as represented by water combustion.

Automobiles Constitute Property—Subject to Taxation

By XENOPHON P. HUDDY, LL.B.

AUTOMOBILES constitute property and are therefore subject to taxation. Every person who owns an automobile may be compelled to contribute to the Government his pro rata of taxes based upon the value of the motor vehicle, but the owner of an automobile can be taxed only once for owning a motor vehicle.

The taxation of automobiles as property, and the imposition of license or occupation taxes should be clearly distinguished. License taxes may be imposed by the Government on automobile owners, and are imposed by the States of the United States and foreign governments in the form of registration requirements and fees. When an automobilist registers his car with the Secretary of State, or any other designated officer, and pays a registration fee of a fixed amount, or one based upon horsepower, he pays, not a property tax, but a license or occupation fee, imposed under the police power of the State. This fee is paid for the privilege of using the automobile, and has nothing whatever to do with the value of the machine. Its graduation, however, may be based upon a logical method of computation such as horsepower, which is as accurate as any other known means for the purpose of computing the fee.

Automobiles Taxed as Personal Property

Property taxation of automobiles has not been given any special attention in the United States. Automobiles have not been distinguished from horses, wagons, jewelry, pianos and other personal belongings, but would it not be more just to automobilists and to the Government to separate the class of personal property composed of automobiles from other personal belongings, and to tax it in a distinctive manner?

In law personal property is deemed to be located where the owner thereof is domiciled, even though the actual physical situation of the property may be in another State or jurisdiction. Most articles of personal property are capable of easy removal, but until the automobile arrived seldom it was that personal property of large value, unless belonging to a common carrier, was in its very nature transitory and subject to travel from State to State. For the reason that an automobile usually possesses no situs outside of the place where the owner is domiciled, it should not be taxed elsewhere.

Obviously, it would be impossible to assess the owner of an automobile with a tax based upon the cost of the machine. Its fair assessable valuation is a matter which is not easy to determine, since a used car depreciates very fast.

In some jurisdictions the attempt has been made to impose a fairly high registration fee on automobile owners, and in consideration of the payment of this fee the owner is exempt from any other tax, either State or local, based upon valuation. A measure of this kind is in reality an ad valorem tax, since in exempting the owner of an automobile from a property tax in consideration of the high registration fee the law virtually takes care of property taxation in the fee paid for registration. It is very doubtful whether a provision of this kind is constitutional. Certainly, if a State charged a high registration fee, which covered also property taxation against the automobile, no municipality or other local authority could levy a tax based upon valuation.

Whether any State, other than the one the owner lives in, may tax an automobile based upon property valuation depends upon whether the automobile obtains a situs in the other State. If no situs is obtained, then no tax can be levied except by the State where the owner resides, since such a tax would violate the interstate commerce clause of the Federal Constitution. If, however, an automobile is used in a particular State for any considerable length of time it would acquire a situs, and, therefore, would become subject to local taxation as property.

In construing and enforcing the interstate commerce clause of the Federal Constitution the rule has been established by the United States Supreme Court that property actually in transit from one State to another is exempt from local taxation; but, if such propery be stored for an indefinite time during such transit for other than natural causes or lack of facilities for immediate transportation, it may be lawfully assessed by local authorities. In dealing with the power of the States to tax imported goods while in the original packages and in the possession of the importer, it must be borne in mind that the clause of Section 10 of Article I of the Federal Constitution, which provides, in part, that "no State shall, without the consent of Congress, lay any imposts or duties on imports or exports" creates a distinction between goods imported from foreign countries and those brought in from other States of our Union. The word "imports" in this section of the Federal Constitution applies only to articles imported from foreign countries, and is an absolute prohibition of State taxation. A different rule, however, obtains with respect to articles transported from one State to another. In such cases there is no positive prohibition like that against the taxation of imports from foreign countries, and the States have power to tax goods that are brought into this State from other States, if they are held for sale there or for other purposes, giving to the property a situs within this State.

How the Tax on Automobiles Is Computed

The methods adopted of computing a tax are more or less a matter for the discretion of the Legislature. Valuation, the method used in property taxation, is logical. Weight has been urged as a proper and logical method of arriving at the tax which different automobiles should contribute. Under this system an automobile which weighs twice as much as another should pay a tax twice in size. Many logical arguments may be urged in its favor, since the heavier a car is the more it will wear out the public highway.

Horsepower has been the method most generally adopted. The lighter a car is the more power it may have. It must be admitted that horsepower is more or less an arbitrary scale selected for the computing of license fees. Arbitrary legislative action is apt to be tainted with illegality. Whether the Legislature possesses the power to tax automobiles according to horsepower has not been squarely determined. It might be said that there is just as much reason to tax automobiles according to color, which would unquestionably be unlawful.

Again, automobiles may be taxable under what is called a wheel tax. This method has been adopted heretofore in respect to horse-drawn carriages, and little objection can be made to it.

Power of Taxation Is the Power to Destroy

Before leaving the subject of taxation it should be mentioned that the power to tax is the power to destroy. If the Government possesses the power to tax a particular object it can tax that object out of existence. The United States Supreme Court has held that the States cannot tax national banks because if the power exists in the States to do this the States can destroy national banks and can tax them out of existence.

On the question of the power of the States to tax travel or transit the same principle applies. The State Government cannot tax a citizen for the privilege to travel from State to State. In other words, transit cannot be taxed in this country.

Following out the principle that transit cannot be taxed, for if it could be taxed it could be destroyed, a tax levied by the State for the privilege of using an automobile, which is excessive, and which amounts to more than a mere license fee, constitutes a tax on transit and to the extent that the tax is on transit, it is unconstitutional.

Abstracts from the 50 Best Foreign Papers

Digest Along Technical Lines for the Engineer

Economy in great increase of speed of high-speed tools——Automatic pressure regulation for brakes and drives——Same utilized for automatic gear changes——Synthetic rubber still in the distance——Formula for brakes——New incombustible celluloids——Types of motor buses.

Peculiarities of high-speed steel, bearing on shop economics, form the subject of a richly illustrated article drawn largely from the reports published by E. G. Herbert in *Proceedings of the Iron and Steel Institute* for May 5, *The Engineer* (London) for May 6 and 13 and *Engineering* for May 27. The principal practical conclusion relates to the much increased durability of high-speed steels which is obtained by raising the speed of its work far above the normal for light cuts, the economy being not merely relative as compared with using a lower speed and a deeper cut, but absolute, inasmuch as the tool's edge lasts longer than for the same light cut made at lower speed. The output is increased at reduced tool cost, and the explanation seems to lie in part in the different action of the heat on the tool and on the work. After an analysis of the endurance curves plotted for a tungsten and vanadium steel hardened at 1,200° C. in air, and thereafter completely quenched in a salt bath at 668° C., for the same steel heated to 1,275° C.—which carried its maximum cutting speed from 60 to 70 feet—and a simple tungsten HS steel, the article concludes, referring also to a plain high carbon tool steel previously plotted: Summarizing, these three varieties of steel give, according to the rapidity of the tempering, feed curves or endurance curves with one or two maximums. The second of these maximums is strongly developed in the carbon steel as well as in the high-speed steels by the rapidity of the quenching. The first work maximum obtained at low cutting speed is developed in the high-speed steels by slowness in quenching or in cooling, and in carbon steel by high temperature for quenching. The act of drawing temper of high-speed steel has not yet been determined. A moderate cooling rate, or, with carbon steels, a moderate drawing of temper, gives a curve with two maximums and a very feeble endurance of the steel in the depressions between these points—for cuts at intermediate speeds—and the curves of tungsten-vanadium steel differ essentially from those of simple tungsten steel. No explanation of these depressions is known, and, on the other hand, in order to decide with exactness the practical bearings of the results of these tests, it would be necessary to take analogous curves for tools operated at normal rates in factories, with turret lathes for example. This has never been done and would require special apparatus.—*Bulletin de la Société d'Encouragement,* May. Previous articles on related subject in the *Bulletin* for July, 1909.

Worm gears with automatic regulation of pressures are reviewed by Dr. Wilhelm Rehfus in five issues of *Dingler's Polytechnisches Journal,* ending May 28. The author presents the automatic brakes of this order which are used in the industries, and suggests modified devices with improvements. The pressures obtained by different constructions are developed mathematically. The combination of a worm-actuated end-pressure brake with a band brake, on the principle of limiting the pressure of each by the excess pressure of the other, is given fully. Many mechanical suggestions are offered which seem applicable in solving the problem of automatic regulation of the speed of automobiles—of commercial trucks, for example—though the author does not enter upon these possibilities, but limits himself to description of mechanical elements with numerous illustrations. There follows a description of a proposed worm-gear brake-mechanism without automatic stop, which is calculated with such dimensions of parts that light hand or foot pressures are sufficient to absorb enormous brake moments without complicated levers and rods. The same construction is developed with centrifugal action taking the place of hand or foot, and a type of coupling or clutch is shown with a helical clutch spring, as used in automobile clutches, taking the place of centrifugal action. The application intended is mainly for belt and pulley transmission in factories, and is meant to produce a gradual engagement. The author then proceeds to apply automatic regulation of pressures to friction drives of various sorts, indicating means for always having just as much friction between driving and driven cones as is necessary for the work in hand and to avoid slippage. Finally, the same principle is employed in connection with an expansible pulley wheel to produce automatic gear change, the pressure upon the belt acting to push the sliding half of an expansible V-pulley to one side, whereby the belt sinks to a smaller circle; that is, a lower gear. An illustration is presented of a motorcycle made on this principle by Vierordt & Co., of Kehl am Rhein, in which a tension pulley or idler operated by hand is made to increase or decrease the pressure of the belt upon one of the belt sheaves, which may be either the driving or the driven, thereby changing its radius and the gear ratio, while the tension pulley at the same time takes care of adjusting the length of the belt to the changed condition.—*D. P. J.,* April 30 and May numbers.

A statement to the effect that the "Farbenfabriken" at Elberfeld was ready to enter upon the manufacture of synthetic rubber is contradicted in *Chemiker Zeitung.* The directors of the concern confirm, however, the claim to having accomplished a successful scientific synthesis of caoutchouc at its laboratories. The stockholders and directors in their decision are said to have taken note of the fact that the scientific synthesis of indigo which was accomplished in 1880 by Prof. Fred Bayer—who is also the discoverer of the new synthetic rubber-making process—was not realized industrially until 1896, nearly 16 years later. It was also considered that a sharp decline in market prices followed the discovery of synthetic methods of production in the cases of both indigo and camphor. It would be a reduced price for rubber which the synthetic product would have to meet.—*Le Génie Civil,* June 11.

A general formula for the calculation of brake bands is given by Engineer Siebeck, and he shows how the pressures applied vary with different constructions. With brakes of automatic application, especially, the maximum pressures may become much higher than the general formula would indicate, and the author gives a supplementary formula which enables one to determine them.—*Zeitschrift des Vereines Deutscher Ingenieure,* April 16.

Automobile buses adopted by the City of Paris are of two types. One carries 30 "fares" without "imperial" or roof seats. There are eight first-class seats, while 22 places are second-class, and of these 13 are seats and nine are standing room. The other type has a capacity of 34, with 13 first-class seats and 18 second-class places. With a different division, this type has 12 first-class and 22 second-class places, and of the latter 17 are seats. —*Mém. et Trav. Ing. Civils,* May 20.

In addition to the non-inflammable new form of celluloid called cellite, which is made by treating the cellulose with acetic ether instead of nitric ether, another cellulose product appears upon the market which is also incombustible or nearly so. It is produced by means of formic acid by the Nitritfabrik Stock Company, of Koepenick near Berlin. The formiates of cellulose, besides being cheaper than the acetylates, possess the advantage of being soluble in an excess of formic acid.—*Le Génie Civil,* June 4.

Laboratory Investigation of Holley Carbureter

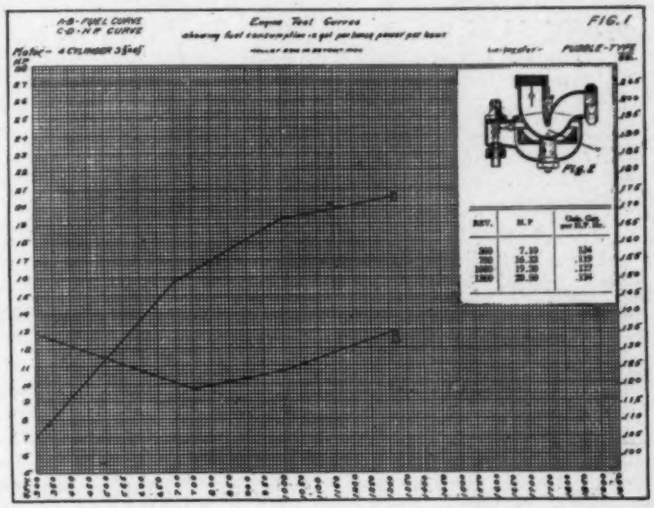
DOUBLE Jet Carbureters are contrived with a view to overcoming the difficulties involved in furnishing uniform mixtures to motors, it being understood that the single jet carbureter has its limitations. In the laboratory of Holley Brothers Company, Detroit, Mich., the facilities available for investigating carbureters, fuel, and motors, from the mixture point of view, are sufficiently complete to enable a physicist to arrive at excellent conclusions, and it is believed that the information here afforded is worthy of close scanning because it is presented in "dead line" form so that the interested reader is given an opportunity to obtain a bird's-eye view of the situation in general.

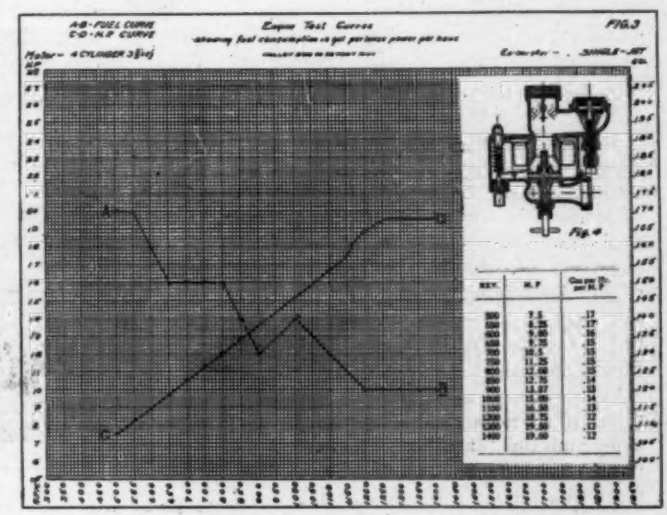
Referring to Fig. 1, which is a chart giving the curve of performance of the puddle type of carbureter shown in Fig. 2, it will be seen how the fuel consumption changes per horsepower, and with the speed of the motor. A summary of the results obtained is given in the tabulation under Fig. 2, and briefly stated, the gasoline consumption dropped to its lowest point as shown on the curve A B when the motor was running at 700 revolutions per minute. The highest consumption was at 1300 and 300 revolutions per minute. The line C D on the chart represents horsepower and shows how the power increased with the speed up to 1300 revolutions per minute.

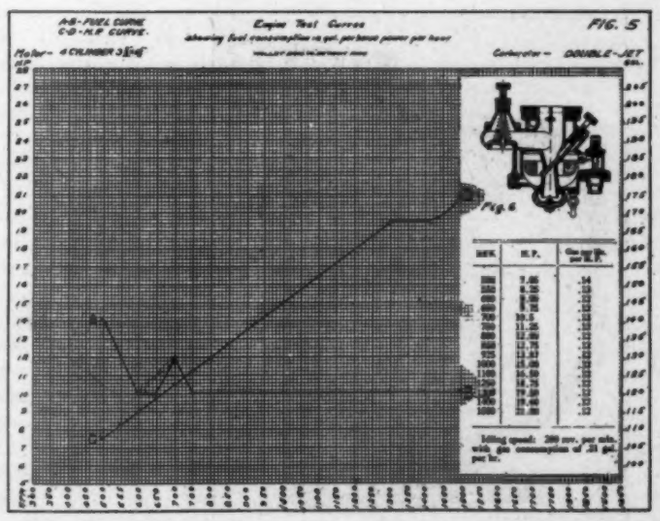
The chart Fig. 3 shows the performance of the single jet carbureter, and Fig. 4 is a section of the particular carbureter used. Under Fig. 4 is a tabulation of the results obtained from which the curves were plotted. In this case, the test spread over a range from 500 to 1400 revolutions per minute inclusive, and the best gasoline consumption was at the highest speed, gradually increasing with increasing speed, reaching a maximum at 550 revolutions per minute. The horsepower developed resulting in the line C D on the chart, produced a straight line up to 1150 revolutions per minute, and an upward curve thereafter to 1270 revolutions per minutes, beyond this speed there was no increase in power. The gasoline consumption is represented by the line A B and it shows quite a few irregularities, thus bringing out the characteristics of the single jet idea in carbureter designs.

The chart Fig. 5 was plotted from data obtained in the test of the double jet carbureter; a section of this carbureter is shown in Fig. 6, and the data of the test is given in the tabulation under Fig. 6. The curve A B is of the gasoline consumption; it was maximum at 500 revolutions per minute, dropped to its lowest point at 750 revolutions per minute, but with slight variation maintained this low level beyond 600 revolutions per minute. The power obtained is represented by the straight line C D up to 1300 revolutions per minute, was horizontal from 1300 to 1400 revolutions, and took an upward sweep from 1400 revolutions to the end of the test. This chart is representative of the splendid performance of the double jet in carbureter designs, and it shows that the gasoline consumption can be maintained at substantially a constant level over the entire range of working speeds.

It is of course true that the thermal efficiency of a motor will decrease with decreasing speed if the gasoline consumption does not hold to a constant rate per horsepower. The double jet carbureter when it performs as shown in the curve Fig. 5, affords nearly a constant thermal efficiency, notwithstanding speed and power variations for almost the entire practical range of the motor. The charts give the horsepower scale in the left vertical column, the speed scale at the bottom, and the gasoline scale in the right vertical column. For any speed within the range given it is only necessary to trace along the vertical line (ordinate) of that speed to the point of intersection of the horsepower curve, and following the horizontal line (abscissa) from the point of intersection to the left for horsepower, but to the right for gasoline consumption.







THREE TYPES OF CARBURETERS TESTED AND COMPARED

Public Service Taxameters

PATRONS of taxicabs find it a rather difficult matter to ride for any length of time and feel perfectly comfortable about the pending charge. They eye the taxameter, shift about in the seat, and in every way show evidences of some strong emotion. Experience has shown that this intuition of evil is but the reflection of experience, although it is a great mistake to go on fretting about things after the evils have been eradicated and the reasons for fearing no longer exist.

With the new taxicab regulations in force in New York City, and equally good regulations in force in practically every city having taxicabs, coupled with the fact that taxameters are available within limits of error so close that there can be no question as to the fairness of the charge, if it is based upon the readings, it only remains for patrons to make themselves acquainted with the workings of the taxameter, and avoid using the chauffeur as a private secretary—allotting to him the duty of deciphering the taxameter instead of acting for themselves. If any mistake is made it is not fair to the taxicab to say that its functions are improperly performed if the trouble is confined to a mere oversight on the part of the private secretary, or if the "fare" elects to do his own reading, and, in the absence of skill, overcharges himself.

A tamper-proof taxameter is the first requisite from the point of view of good business; the operator of taxicabs cannot afford to place such an expensive piece of property in the keeping of a chauffeur and allow him to rove without having some way of keeping track of the length of his migration, even though it is not very easy to tell of the number of "pick-up" fares the chauffeur may "entertain" during the trip.

It follows, under the circumstances, that the interests of the operating company and the "fare" are identical; both parties are vitally interested in the distance that the taxicab may travel, and the only way that they can be sure of this is to employ tamper-proof taxameters.

Fig. 1—Front view of Taxameter with fare register out of service

The instrument, in view of its vital importance, should be:

(a) Automatic, (b) accurate, (c) with individual totalizers and (d) tamper-proof. That vibration and the other usages due to service will, in some measure, influence the situation, is to be expected, taking taxameters in general, but the trend is toward the character of instruments that are capable of coping with the exigencies of service with little chance of becoming deranged. This depends upon its exact construction and to the care with which it is maintained. Since it is expensive to keep up an inspection system and to make extra repairs to instruments, even not counting the inconveniences which will come if the government "inspector" fails to appreciate the good qualities of the type of instruments employed, it follows that the interests of the operating company and its patrons are on the same basis, and the best possible type of instrument is the one which will come nearest to satisfying the patron and the server.

Fig. 2—Rear view of Taxameter with fare register out of service

Fig. 3—Rear View of Taxameter showing half-mile travel

The single fare instrument offers advantages; with it there is no opportunity for the chauffeur to juggle with the tariff.

"Fare" Should Know Taxameter

In order to afford the requisite amount of information to the patrons of taxicabs, photographs of the International Taxameter are here reproduced, which, if studied, will permit the interested reader to familiarize himself with the details of the instrument sufficiently to enable him to enjoy his ride and foot up his own tally. Fig. 1 shows the face of the instrument with the flag up, also with the fare blinds down, and the extra charge dial at zero. The initial tour totalizer, the extra totalizer, and the fractional totalizer are in full view. The aperture on the right hand side shows in bold face letters "For Hire." This sign is only in view when the flag is up.

Looking at the rear of the instrument as shown in Fig. 2 when the flag is up and the taxicab is "For Hire," the aperture shows total number of miles at the top, and dead mileage at the bottom. The latter registers only when the taxicab is vacant. Below this aperture is a spur with which the extras are registered; then comes the key to wind the clock mechanism, and in the lower corner is a little spur which is the flag locking device. At the lower left-hand corner is the flag operating key, and in the left-hand side of the base is the hole for sealing.

Fig. 3 shows the back of the taxameter when the flag is down, and Fig. 4 is of the front. The initial charge is 40 cents for the first 1-2 mile, and it shows in the right aperture below "Fare." In the "Extras" aperture there is a 20-cent charge, and in the right-hand aperture the bold-faced letters spell "Hired." The initial totalizer shows 0213, which is one number greater than before the flag dropped. The extra totalizer shows 0266, and is also one number greater than before the flag dropped. The fractional totalizer registers the same as before the flag dropped, because there were no fractions of a mile or waiting time to be registered.

Referring again to Fig. 3, the numerals of the total miles indicator show that the vehicle traveled 5-10 of a mile, and on the fractional totalizer in the lower right-hand corner on the front dial as shown in Fig. 5 there is an increase of one unit from 8465 to 8466, so that the total fare as registered on the dial of Fig. 5 is 50 cents, which is an increase of 10 cents over the fare registered in

Fig. 4—Front view of Taxameter showing fare and extra register in service

Fig. 5—Front view of Taxameter after travel of one-half mile

Fig. 6—Front view of Taxameter at instant of discharging fare

Fig. 4. In the extra aperture of Fig. 4 there is a charge of 20 cents for baggage, and this, with the fare, makes a total of 70 cents. When the passenger arrives at his destination, alights and wishes to discharge the vehicle, the driver gives one turn of the flag crank, which sets the taxameter at "Non-recording." This gives the driver time to collect his fare, but as soon as the passenger settles his account, the driver gives one more turn to the flag crank, which sets the flag in the upright position as shown in Fig. 1. The settlement must be on a basis of the amount registered in the fare aperture, plus the amount registered in the extras aperture. The total in this case, as shown in Fig. 6, being 50 and 20, equals 70 cents.

Baedekerizing the Automobile Blue Book

By HENRY MacNAIR

So long has the name of Baedeker been associated in the public mind with guide books that from a Teuton patronymic it has come to be a substantive of general use, applying particularly to the best in the hand-book line, for a Baedeker is now deemed an indispensable adjunct to rail or boat touring.

The preface to the most recent edition of Baedeker's United States sets forth that the book is "intended to help the traveller in planning his tour and enable him the more thoroughly to enjoy and appreciate the objects of interest he meets with." To which, as a concrete expression of the mission of a guide book, the editors of the new Blue Book, with a mental reservation as to the placing of the final pronoun, most heartily subscribe, though very much, perhaps, in the spirit of the sinner who tacks the Lord's Prayer at the head of his bed, and exclaims "Lord, them's my sentiments!"

But while Baedeker undertakes to supply mental pabulum to the traveler by rail and boat, there is another constantly and rapidly increasing class which follows the highways in their own cars, often as luxuriously appointed as the most palatial railway carriage, and which heretofore has not been recognized as being in the ranks of seekers after such information. Manifestly a guide book designed for other classes will but partially supply the need of the autoist, in that it does not direct his motor to the points described. Then, too, there are other things of beauty and interest, which are as a "sealed book" to him who travels other than by motor.

It has not been thought necessary to dispute the occupation of the field pre-empted by Baedeker, for, outside, the uncultivated acres are many and expansive.

It is the avowed purpose of the Blue Book to lay before its readers not only the completest information as to all the motoring roads in a given section, but to supply in advance accurate data and reliable information as to the historic, the unusual, the quaint and the beautiful features of each and every trip. In order to attain this result, the essential road directions have been pruned of all exuberant verbosity to make room for a descriptive outline which appears in a separate paragraph at the beginning of each route. Of a surety, then, no mere plagiarization will suffice, for each "descriptive outline" must be written from actual car-observation, after consulting all the dispensers of hand-book lore and digesting the facts of local history gleaned from various sources. Indubitably no better way of sight-seeing exists than from an open motor car, the speed controlled at will, now flashing by the prosaic and unlovely, now dallying at those spots made attractive by the lavish hand of nature, or the cunning of man's art.

Then the viewpoint! It is subversive of the spirit of '76 to meekly allow a Britisher to tell us what we may see in our own country, for all of the English editions of Baedeker are edited by Dr. Muirhead; himself a worthy and erudite scholar, he is yet not free from the imputation of prejudice who dismisses our own Schuylerville and the Battlefield of Saratoga with a scant four lines in the tiniest of type. One can imagine the burst of indignation which he would bring about his ears did he give no more extended mention to the battlefield of Waterloo, and yet both are recorded among "Crecy's Fifteen Decisive Battles" of the world's history. It is, perhaps, of sufficient interest to the patriotic to reproduce the exact text of Baedeker and that of the Blue Book covering this particular point:

Baedeker—"A branch of the B. & M. Railroad runs to (12M.) Schuylerville (Hot. Schuyler $2), whence the Battlefield of Saratoga, with its monument, may be visited. Memorial tablets mark the chief points of the battleground, and there is a collection of relics in the Schuyler Mansion Museum."

Blue Book—"Leaving Saratoga on Lake Ave., a direct macadam road is followed to **Schuylerville**, a point of great historic interest, near which place the battle of Saratoga was fought. On the corner of Spring and Broad Sts. (10.9 m) a tablet indicates the camp ground of the British army (1777). To the left a short distance is the Marshall House, in the cellar of which Baroness Riedesel took refuge. To the right on Broad St. is the spot, marked by tablet, where Burgoyne surrendered, thus securing American independence. Just beyond, by turning right on Burgoyne St., we reach the Battle Monument, commemorating Burgoyne's surrender, and the close of one of the "fifteen decisive battles of the world" The monument is 154 ft. high and was completed in 1883. Among the other points of interest is the site of Ft. Hardy (1755), Fish Creek Bridge, near Schuyler Mansion, the battlefield of Saratoga and Freeman's farmhouse at Bemis Heights (22,000 soldiers engaged), and the Dovegat House near Coveville, 2 miles south."

The Blue Book, then, has a field of its own in applying an amplified Baedeker feature to its publications which, prior to 1910, only attempted to point out the road. With facts collected from all sources, and especially arranged for the convenience of the tourist, this feature will prove a boon to the sightseer.

"Senator" Callan Plays Both Ends Against the Middle

"SENATOR" ALBERT S. CALLAN, father of the New York State Motor Vehicle Law, which goes into force and effect August 1, 1910, is a confirmed bachelor. "Senator" Callan, who, by the way, is not Senator at all, but a member of the Lower House of the New York State Legislature from Columbia County, only twenty-five years old and does not look it, is authority for the statement that he is not susceptible to the wiles of Cupid.

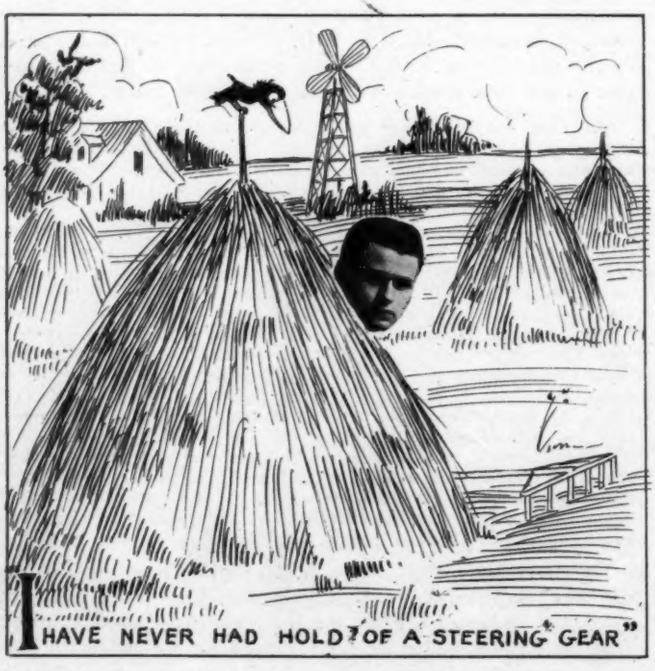
He is a charming fellow, nevertheless—a boyish, intense youth, who does not seem to realize fully that "his" law will make the official ownership of an automobile in New York State about four times as costly as it was heretofore.

In some sections of the State the automobile is not yet sufficiently popular to prove a political asset to an aspiring young legislator, and Columbia County, the constituency of the young "Senator," is said to be one of these sections. It has been whispered that opposition to motoring in the attitude of "Senator" Callan has proved acceptable to a good many of his constituents. However that may be, the legislator freely admitted to the representative of THE AUTOMOBILE that prior to the last campaign one of his neighbors remarked to him: "Callan, I will vote for you, and I want you to pass a law so that I can stand out in my front yard and shoot every d—d motorist that passes my place."

Mr. Callan does not take that extreme view. In fact, he does not believe that the owner and operator of an automobile ought to go to jail simply because he owns a machine, unless he breaks the law. He recognizes the fact that the importance of the automobile is growing and that really radical words or acts might have the effect of striking at some neighbor whose vote and influence at the polls would be more than a negligible factor.

But his effort at lawmaking will afford excellent chances for many a motorist to break into jail.

The man responsible for this law is a smooth-cheeked, athletic youth. He is slender and graceful in his carriage and wears his dark hair slicked back from his rather low brow. He is the possessor of an astonishing personality—this man, whose law will cost motordom $2,000,000 a year, according to the estimate of Governor Charles E. Hughes in his tentative budget figures. But let him tell his own story, just as he recounted it for the exclusive use of THE AUTOMOBILE:



"I was born at Albany in 1885 and moved to Valatie, Columbia County, when I was about ten years old. I attended primary and grammar schools, and when I had received my preliminary education I matriculated at Hobart. I never was graduated from anywhere. I was a kind of special student—did not go in for the classics or even the scientific courses. I did not take a degree. As far as the sciences are concerned, I am free to admit that they never attracted me. There is so little of the love of mechanics about me that the purr of a motor car means nothing more to me than the burning of so much gasoline.

"But at college I did take an interest in athletics. I was a football and a baseball man, and was manager of the dramatic club. No, I never did anything in the line of dramatic acting. I left Hobart in 1907, having been chosen an officer in the National Guard.

"In the directory my name appears as a law student, but I have no definite idea as to when I shall be admitted to the bar. My studies along that line are far from complete. I am a politician, and my ambition is to serve the people in just as high capacity as I can reach. Some of my friends have sought to have me make the race for Lieutenant-Governor, but on account of my years that will be impossible under the law this year.

"I am a Republican, and am proud to say that I believe in the organization, first, last and all the time. I voted against the direct primary measure which was recently defeated and I am perfectly satisfied with my action.

"My political history commenced as soon as I was out of college, when I ran for the Legislature and was defeated by a plurality of 600 votes. I am a persistent man, and next year I made the race again, winning by a margin of 99. Last fall my plurality was about 1,500.

"I hope to be a member of Congress, Governor or United States Senator in time, and even in a higher office if the people call upon me to take it. The State Senator from my district is a fine man and wants to succeed himself in the Upper House. I believe he will—this time. I have heard that he does not look with enthusiasm on all the flattering publicity that I have attracted. *However, he has nothing to fear from me.*

"In each of my campaigns the automobile has been an important feature. Personally I have no use for the motor car. *I never had hold of a steering gear in my life,* although my father owns a car and I have ridden in it hundreds of time. The press has called me a 'non-motorist.'

"I have a fine little mare that I ride a great deal, and I love to walk, but the automobile and its alleged exhilaration do not appeal to me.

"The feeling against automobiles may be described under two heads—in the first place, jealousy of motorists by those who do not possess cars, and, second, hostility to motor cars by frightening horses and killing chickens. When Bill Smith buys a car and goes whizzing along the roads, cutting deep gashes in the surface and scaring Farmer Brown's team to death, the feelings of Farmer Brown for Bill Smith, and through Bill Smith for all automobilists, is potent and peppery. Just before the last election I had a talk with one of those 'Farmer Browns,' and he said: 'Mr. Callan, we know you do not like automobiles, and we want you to pass a law so that we can stand in our front gates and shoot down every d—d motorist who tries to pass.'

"I told this man that I would pass a law to check the speeding and make the motorists pay more for the privilege of cutting up the roads. This I did, and I am proud of it. Just as soon as the law had been signed by the Governor I got him to give me the pen he used, just the same as Congressmen sometimes

secure the pens with which Presidents sign important bills. Then I had a little certificate drawn up, showing my authorship of the Callan Act, and I had the certificate and the pen framed. They hang in my home, and I frequently look at them with a certain element of wonder that so young a man as I should have played such an important part in legislation upon such an important subject.

"I have no regular occupation outside of politics and as an officer of the National Guard, but in the course of time I think I shall be a lawyer.

"I am a confirmed bachelor, and have no idea of marrying at present and no future intention of doing so. In fact, I am wedded already to politics."

The representative of THE AUTOMOBILE called attention to the fact that Mr. Callan's hostility to the motor car seemed to include a similar feeling toward women, business and studies, but Mr. Callan only smiled and said that in future there might be some amendments introduced.

The "Senator's" Most Prized Possession—The Governor's Pen

What a Lawyer Sees Amiss in the Bill

By XENOPHON P. HUDDY, LL.B.

This law in some respects is a good one, but it also contains defects and vitiating measures which are apt to cause trouble in its practical administration, particularly referring to the great and arbitrary powers given to the Secretary of State. He is the officer designated to carry out the provisions of the act and see to it that the requirements are complied with by manufacturers, dealers, owners and chauffeurs.

It is a well-settled principle of political law that the legislative power and the duties of the Legislature cannot be delegated. It means that the Legislature of the State of New York, for example, cannot legally shift its duties to some other person or body of persons to perform since the constitutional form of government recognizes no body other than the Legislature in carrying out any form of regulatory control for the State.

Under the Callan Act chauffeurs must be licensed by the Secretary of State, but the method and details of licensing this class are not prescribed in the law itself, but the Secretary of State is empowered to prescribe an examination as to the qualifications of automobile drivers, and it is discretionary with him as to what qualifications shall be required. It is provided that no license shall be issued until the Secretary of State or his authorized agents are satisfied that the person applying for a license is a proper one to receive it. This last sentence confers immeasurable powers upon the Secretary of State and his agents in granting or refusing licenses to chauffeurs. Inasmuch as chauffeurs are depended upon to drive the greater percentage of the cars manufactured, the number of licensed chauffeurs in the State of New York may in a great measure depend upon the discretion of the official who licenses them. Instead of conferring this power upon the Secretary of State, the law itself should have prescribed the qualifications. By delegating the duty and power to the Secretary of State the Legislature has undoubtedly delegated its legislative authority, which is contrary to our fundamental law.

In the attempt to place in the control of the Secretary of State the chauffeur class, and in omitting to prescribe in the law the qualifications for chauffeurs, it is very doubtful whether the law is of any validity.

For the conviction of certain offenses the Secretary of State has the power to suspend or revoke the registration of an automobile or a chauffeur's license. It is also provided that no new license shall be granted where one has been suspended or revoked, unless the discretion of the Secretary of State so authorizes it. Here again we have the discretion of the Secretary of State controlling to a certain extent the automobile industry in the State of New York. Arbitrary action on his part is possible and can work great damage, but a person who has been arbitrarily treated could bring a writ of mandamus to make the Secretary of State grant him the privilege to use his automobile on the public ways of the State.

It has been announced in the press that the Secretary of State will not issue licenses to drivers of known recklessness. The elimination of drivers of this character should be accomplished, but the discretion of the Secretary of State alone should not constitute the sole judge of whether a citizen is a reckless automobile operator. The fact that chauffeurs are compelled to state in their application blanks, under oath, whether they have been convicted of violating any automobile law is in itself a vitiating requirement. Whether a chauffeur has, or has not, been convicted of violating any automobile regulation in the past has nothing to do with obtaining a license under the new act.

The administration of this law necessarily demands quite a large force of persons as examiners. These examiners have been appointed. It cannot be denied that the patronage is large which has been placed at the disposal of the Secretary of State and for this reason alone the law should have prescribed, not only the qualifications of chauffeurs and drivers, but of examiners.

The law does not require any examination of an owner of an automobile who drives his own car. Only chauffeurs must be licensed. Sons and daughters may drive their fathers' cars without obtaining a license, provided they are 18 years of age. Any non-owner may borrow a car and drive it without a license.

In regard to the fees charged, the graduated fees according to horsepower are in lieu of all taxation. This provision is unconstitutional since it amounts to a special exemption of motor vehicles from taxation while other vehicles used on the public highways are subjected to being taxed.

Coming Events in the Automobiling World

July, Middle of...	Richfield Springs, N. Y., Hill Climb.
July, Middle of...	Grand Rapids, Mich., Road Race of Grand Rapids Automobile Club.
July 16-18.....	Motor Contest Association Tour to Catskill and Hill Climb Up Kaaterskill Clove.
July 18-23.....	Milwaukee, Wis., Tour of Wisconsin State Automobile Association for Milwaukee Sentinel Trophy.
July 28-30.....	Detroit, Mich., Summer Meeting Society of Automobile Engineers.
July 30.....	Wildwood, N. J., North Wildwood Automobile Club. Speedway Races and Club Run.
Aug. 1.....	Minneapolis, Minn., Reliability Run of Minneapolis Automobile Club.
Aug. 3-5.....	Galveston, Tex., Beach Races, Galveston Automobile Club.
Jan. 7-14, 1911...	New York City, Madison Square Garden, Eleventh Annual Show, Pleasure Car Division, Association of Licensed Automobile Manufacturers.
Jan. 16-21, 1911..	New York City, Madison Square Garden, Eleventh Annual Show, Commercial Division, A. L. A. M.
Jan. 28-Feb. 4, '11.	Chicago Coliseum, Tenth Annual National Automobile Show Under the Auspices of the National Association of Automobile Manufacturers, Inc. Pleasure Cars and Accessories Exclusively.
Feb. 6-Feb. 11, '11.	Chicago Coliseum, Tenth Annual National Automobile Show Under the Auspices of the National Association of Automobile Manufacturers, Inc. Commercial Vehicles, Pleasure Cars, Motorcycles and Accessories.

THE AUTOMOBILE

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THE news value of the automobile industry is sufficient without drawing upon the views of Wall street. The reasons why money is being locked up in the vaults of savings banks will have to be explained on some basis which does not impugn the economic stability of the automobile industry. The Chicago *Inter Ocean* of July 7, in quoting extracts from an editorial which appeared in THE AUTOMOBILE, concludes by shedding light which clinches the contention that small investors have good reasons up their sleeves for not risking their hard-earned cash in Wall street. When the champions of "high finance" show as clean a pair of heels to dishonesty as the automobile is able to present, they may then be in a position to finger hard-earned money, the lack of which the automobile industry has never felt. The arguments presented in the *Inter Ocean* were as follows:

The automobile industry is indignant over the effort of Joseph T. Talbert, vice-president of the National City Bank of New York, to blame our present financial worries upon the large outlay which the people of the United States are making in automobiles. Mr. Talbert, in a speech before the Texas Bankers' Association some time ago, declared that this "economic waste" approximates $500,000,000 a year—one-half for new machines and one-half for the maintenance of those in use.

The automobilists have taken issue with Mr. Talbert by demonstrating that the larger part of this outlay is for machines used for business purposes and that the actual expenditure for pleasure automobiles for 1910 will be just about $104,000,000, to which must be added the cost of maintenance.

Moreover, the automobilists point out that the expenditure of even this sum for pleasure automobiles is merely taking the place of other kinds of pleasure payments. If it were not the automobile, it would be something else that would cost money, whether it be horses and carriages, or going to the theatre, or books.

But why worry over these figures or over the other possibilities for the purchase of luxuries? Mr. Talbert's attempt to unload our financial anxieties upon the automobile will never explain the worries of our financiers. It will not explain why the small investors are locking their money up in savings accounts instead of using it in the purchase of stocks and bonds, or why the railroads are curtailing expenses and improvements.

A dozen years or so ago half of America—masculine and feminine alike—was astride of bicycles, but the investment in that luxury did not cause the pillars of the stock exchange to tremble. In a dozen years from now we may all be drawing on our savings bank accounts to buy airships, but the fact of itself will have no more bearing on the status of the financial world than a matinée girl's extravagant investments in chewing gum and ice cream.

The financial worry which is giving our New York bankers some uneasy nights has far more important causes than the purchase and use of automobiles. And if Mr. Talbert spoke his full mind he would admit it.

* * *

MOTOR trouble, due to the accumulation of carbon in the combustion chambers and over the piston heads, is looked upon by the average autoist as a regular thing. Every time a motor shows a tendency to overheat, or when a back kick is too readily realized, the autoist runs for his can of carbon remover and makes haste to dump it into the motor's cylinders. The right time to apply a remedy is when the disease is such as to demand it. Physicians claim that a patient's system is fortified against poisonous nostrums only when the nostrums are indicated and the patient is really suffering from the malady that demands them. Take mercury, for instance; but a slight amount of this poisonous substance will prove fatal to a well man, whereas when this medicine is indicated the amount of it that the patient is able to absorb with impunity is remarkable. In the same way, carbon remover in a combustion chamber will be absorbed with impunity if there is carbon present, but if a cylinder is in good health, then the carbon remover as a medicine will be free to attack the cylinder, instead of doing useful work.

* * *

FREQUENTLY when a diagnosis of cylinder trouble is being made, the conclusion is on a snapshot basis. Instead of incrustation within the cylinder walls being at the bottom of heating troubles, it will more likely be found that the accumulation is over the exterior surfaces of the dome. Such formations produce spheroidal action in the water. No matter how vigorous the water circulation is, there will be no transfer of heat worth taking into account after the temperature rises beyond a certain point, as it will when the conductivity of the dome is stilled by incrustation, so that spheroidal action is what takes place and cooling action dies. When a motor is being examined, a diagnosis of the malady to be complete must include an examination of the exterior dome surfaces as well as the internal walls of the cylinders.

* * *

COOLING, if it is regarded as a necessary evil, is seen in the right light, but the reasons for cooling are rarely ever properly considered. Every heat unit "sponged" off of the cylinder walls by the circulating water is a dead loss. Any plan which makes it unnecessary to rob the cylinder of its heat is a clear gain. When we consider that substantially 50 per cent. of every gallon of gasoline put into the tank leaks out of the radiator in the form of heat, we have a basis for pondering that should convey its own reward.

EFFICIENT cooling is only to be realized when the heat escape from the combustion chamber is retarded to the greatest possible extent, to do which demands that the "gate" be restricted. Since all the heat must go through the cylinder walls to get to the cooling water, it follows that limiting area of surface puts a stop on the heat transfer. This limitation, to be efficacious, must be applied in conjunction with the flame-swept surfaces; in other words, it is the inner wall which must be limited in area.

* * *

WHEN the transfer of heat is snubbed to the greatest possible extent by reducing the flame-swept surface to the minimum, the remaining problem is to maintain the cylinder walls at a working temperature. This is done by directing a sheet of water over the exterior surfaces and counting upon the same to absorb heat from the material of the cylinder walls at a rate which will prevent the material of which they are made from increasing in temperature above the safe working temperature of the lubricating oil used within the cylinders. When this task is performed, any further cooling effort detracts from the thermal efficiency of the motor.

* * *

PREPARATIONS for a war with Japan are now going on in this country. The training camps in the several States are filled with militia which is being trained by Federal officers, perhaps for the purpose of whipping it into shape in time to say "How-do-you-do" to the little brown man when he comes. The chances are that the Panama Canal will be a blind ditch when war drums beat. Japan probably knows that the only chance it will ever have will be before the completion of the water connection referred to. In the meantime, the public must look on and assume an attitude of stolid indifference, while the resources of the country are being dissipated to some extent, at any rate, in the training of men who may elect not to respond to the call when it comes, all of which, to the high disregard of the progress which has been made in aeronautical work.

* * *

BATTLESHIPS are limited in their radius of action to the distance that a shell may be projected from the mouth of the most powerful guns employed, after the ships reach an enemy's shores. Aeroplanes do not have to be protected from the gun play of the enemy's battleships, nor are they limited in their radius of travel by shore lines. The only object in going to war is to make the enemy pay a war indemnity. A half-dozen well-directed shells dropped from a perch in the clouds would bring money out of a miser's coffers, let alone the treasure box of a community.

* * *

ADMITTING that the deliberations of the Supreme Court are bound down by precedent, even taking it for granted that they should be, the fact remains that the General Staff is in poor business looking to precedent as a safe guide and a proper rule. The little brown man, when he comes, will pay high disregard to the precedents and rulings of the Supreme Court. If he brings with him a pack of aeroplanes, and the kind of men who are accustomed to staring death in the face with a bland smile, the little brown men will have fun with the militia, and the General Staff will then have to do but poorly and in a hurry the things it may now accomplish efficiently with ample time.

* * *

ABROAD an international touring law is being fashioned, which will permit of touring all over Great Britain and the Continent with no greater inconvenience than the autoist will encounter on a trip from London to Coventry. In New York State a law is about to be put into force which puts it up to the autoist to decide whether he will get rid of his automobile or the lawmaker who is responsible for his trouble. If the Callan Bill is a good one, every autoist in the Empire State should exert his influence for, work for, and vote for the "Senator" who says he is responsible for the bill; but should the bill prove to be a crown of thorns, it should be remembered that the "Senator" professes to be serving a certain class of citizens who have never been over friendly to the automobile.

* * *

PUBLIC service, from the cab point of view, has always had its sore spot, due to the fact that patrons unfamiliar with city streets were compelled to rely upon the word of the jehu for the distance traversed. The occupant of the driver's seat, with an eye to business, always seems to have seen double when it came to the settlement of the account based upon the miles traveled, and when taxameters came into vogue, the "fares" drew a long breath. There were yet a few details to be mastered; with the coming of the mechanical tell-tale came the driver with a mechanical bent, who manipulated the machine, and, frequently, offset the advantage that was to be derived from it. The time has arrived in the advance of the art when the "fare" is no longer concerned about the crooked wiles of the jehu. Taxameters are tamper-proof, and public inspection should debar them from traveling faster than the cab.

* * *

TOURING time is here and the autoist with his car is to be seen wherever the roads are fit to be traveled upon. But a change is coming over the personality of the autoist who tours on pleasure bent; it is no longer a question of how fast will the automobile go, or how far is it from one place to another, as much as it is a question of where the tour leads, and what of interest will be encountered along the way. This phase of touring is handled by the Automobile Blue Book as a Baedeker feature. Points of historic interest are sufficiently described to permit the autoist to decide as to the expediency of including them in the itinerary of the tour. In the old way of mapping out a tour, it sometimes happened that the autoist traveled a thousand miles to inspect some historic scene that he happened to know about, passing possibly a dozen of more interesting spots along the wayside, because he did not know about them. It is possible to profitably spend a week on a single route within a hundred miles from home, and the cost is enormously reduced. This Baedeker feature is the best remedy for a large tire bill that has ever been devised.

Official Program for the Convention for S. A. E.

HOTEL TULLER, DETROIT, MICH., JULY 28, 29 AND 30

THURSDAY
9 a.m.—Business Session.
2 p.m.—Professional Session.
7 p.m.—Society Dinner and Professional Session.

FRIDAY
9 a.m.—Visit to Manufacturing Plants.
1 p.m.—Boat Trip and Discussion of Papers.
Evening—Dinner at Light House Inn.

SATURDAY
9 a.m.—Professional Session—Commercial Vehicles.
1 p.m.—Professional Session.

THURSDAY, 9 A. M.—BUSINESS SESSION

1. Opening Address by the President: "The Future Aims of the Society and the Work Already in Hand." H. E. Coffin.
2. Report of Tellers of Election of Members.
3. Treasurer's Report.
4. Reports of Committees.

Subjects for General Discussion

1. The Society of Automobile Engineers, the Lines Along which the Organization May be Made of the Greatest Value to its Members Individually and to the Motor Car Industry.
2. The Society Constitution and its Limitations.
3. Suggested Amendments to the Constitution which May Facilitate the Practical Work of the Society.
4. The Publication of a Digest of Technical Literature.
5. The Conduct of a Reference Library.

THURSDAY, 2 P. M.—PROFESSIONAL SESSION

1. The Specification and Heat Treatment of Automobile Materials. Address by Mr. Henry Souther.
2. The Test of a 20 H. P. Franklin Air-Cooled Motor. By Prof. R. C. Carpenter.
3. Variation of Current Practice in Anti-Friction Bearings. Paper by D. F. Graham.
4. The Pyrometer—Its Development and Use. Paper by W. H. Bristol.
5. Testing the Hardness of Metals. A. F. Shore and H. G. McComb.

Subjects for General Discussion

1. The Engineering Lessons to be Learned from the Motor Car Contest.
2. Drive Shaft versus Rear Wheel Brakes.
3. Three-Point versus Four-Point Suspension.

THURSDAY, 7 P. M.—SOCIETY DINNER
followed by
Professional Session

1. Report of Committee on Tire Efficiency. By F. J. Newman, Chairman.
2. Report of Committee on Gear Steels. Dr. G. W. Sargent, Chairman.
3. The Basis for Motor Car Taxation. Charles Thaddeus Terry, Legal Adviser of the American Automobile Association.
4. The Establishment of a Court of Patent Appeals. By E. J. Stoddard.
5. How to Make Gears Quiet by Grinding. Frederick A. Ward.

Subject for General Discussion

1. The Responsibility of the Motor Car Engineer to His Company and to the Public.

FRIDAY, 9 A. M.—VISITS TO MANUFACTURING PLANTS

Aluminum Castings Company,
Burroughs Adding Machine Company,
Cadillac Motor Car Company,
Chalmers Motor Company,
Detroit Steel Products Company,
E-M-F Co.,
Gear Grinding Machine Company,
Packard Motor Car Company,
Timken-Detroit Axle Company.

(Members to elect three of above plants which they individually wish to visit; visiting parties to be grouped accordingly.)

FRIDAY, 1 P. M.

Members will meet at the offices of the Timken-Detroit Axle Company for luncheon on shipboard and for an afternoon boat trip as the guests of the Timken-Detroit Axle Company.

Professional Session on Shipboard

1. Seamless Steel Tubes and the Necessity for Standardization in Their Specifications. By H. S. White.
2. Slide, Rotary and Piston Valves versus Poppet Valves for Gas Engine Service. Paper by Eugene P. Batzell.
3. Ill-Smelling and Smoky Exhausts. Paper by F. D. Howe.

Subjects for General Discussion

1. Wheel Alignments; Camber and Foregather.
2. Hot Rolled Gears (Teeth Rolled in) for Transmission and Differential Purposes.
3. Best Tooth Form for Quiet Gears, Both Spur and Bevel.
4. Valve Seat Angles.

FRIDAY EVENING

Social Session. Dinner at Light House Inn for those attending convention and for the ladies accompanying them.

SATURDAY, 9 A. M.—PROFESSIONAL SESSION
COMMERCIAL VEHICLES

1. Motor Trucks for Railroad Service. Paper by T. V. Buckwalter.
2. Test Data Upon Sheet Metal Frame Sections. By L. R. Smith.

Subjects for General Discussion

1. Proper Power and Speed for Gasoline Motors for Truck Purposes, and Proper Road Speeds for Vehicles of Different Capacities.
2. Location of Motor for Commercial Vehicle Work—in Front Under Bonnet or Under Seat.
3. Long Stroke versus Short Stroke Motor—Advantages and Disadvantages of Each.
4. Driver's Seat on Left versus Driver's Seat on Right for Commercial Car Purposes.
5. The Edison Battery in Practical Vehicle Service.
6. Electric Vehicle Mileage.
7. Fool-proofing the Commercial Car Mechanism and Its Control.
8. Standardization Possibilities Within the Commercial Car Field.

9. A Proper Nomenclature in the Distinction of Freight and Passenger Vehicles.

10. Tire Mileage and Costs.

SATURDAY, 1 P. M.—PROFESSIONAL SESSION.

1. Nomenclature of Motor Car Parts. Paper by F. E. Watts.

Subjects for General Discussion

1. Driver's Seat on Left versus Driver's Seat on Right for Pleasure Car Purposes.

2. Leaf Springs, Methods of Mounting and the Treatment of Springs by the Manufacturer and in the Hands of the Motor Car Owner.

3. Magneto Efficiency.

4. Current Practices in Lubrication and the Practical Results Obtained.

5. Standardization Problems. Those Matters which Deserve the United Attention of the Motor Car Engineers in an Effort to Simplify the Purchasing Department and Deliveries Problem.

Papers

1. Cork Insert Pulleys as Applied to Motor Vehicle Manufacturing Machinery. Lawrence Whitcomb.

2. Carrying Appliances for Tools, Tires, etc. By H. H. Brown.

ADDITIONAL SUBJECTS

For Discussion if the Opportunity Affords

1. Single versus Dual versus En Bloc Cylinder Constructions—the Advantages and Disadvantages of Each.

2. Two versus Three versus Five Bearing Crank Shaft Construction.

3. Die Cast versus Sand Blast Bearings.

4. T Head versus L Head versus Valve in Head Cylinder Construction.

5. Cast Iron Valves.

6. Piston Ring Fitting and Piston Ring Friction.

7. Proper Portioning of Cooling Systems.

8. Foreign Matter in Commercial Gasoline Obtainable Upon the Market at the Present Time.

9. Motor Noises and Their Remedy.

10. Brake Materials.

11. Influence of Case Form and Bearing Style Upon Gear and Gear Box Noises.

12. Six Cylinder versus Four Cylinder Motors of Equal Rating.

13. Practical Experience with Fixed Ignition Timing.

14. Single versus Multiple Ignition Points.

15. The Gear Ratios of Three and Four Speed Transmissions.

16. The Relation of Transmission and Rear Axle Noises.

17. The Preparation of a Stock Car for Racing Work.

18. Worm Drive.

19. Motor Power Required to Drive a Motor Car on Various Road Surfaces at Various Speeds.

All automobile engineers are invited to attend the convention, whether members of the Society or not.

British Supplies Manufacturers to Organize

Patterned after the A. L. A. M., the British manufacturers of automobile and automobile accessories and supplies is in process of formation. In addition to the makers, the organization will include agents and the main purpose of the body will be to prevent concessions from the list prices of the trade.

During the past two years, the tendency of fierce competition has been to force agents to divide commissions in order to get business and as a result, the selling end of the game has acquired an unhealthful tinge.

Already a number of the most important makers located in the Birmingham district have joined. Representatives of foreign automobile makers have been invited to take part in the new organization.

The Automobile Becoming Popular in Jamaica

Consular reports from Jamaica show that the use of the automobile in that tropical land is increasing sharply. Consul Frederick Van Dyne, stationed at Kingston, says that while last year the number of motor cars owned in the city was six but that now there are over 25, besides those used by the Jamaica Motor Company, which operates a passenger, mail and freight line. There are 2,000 miles of excellent roads in Jamaica, and according to the consul, a car that can climb hills will find its use in that delightful island.

Midsummer "Regal Plugger" Is Out

Full to the covers of interesting matter, the midsummer number of the *Regal Plugger* has made its appearance. The neat little booklet, edited by Norman I. Taylor, contains several technical reviews, touring stories of a descriptive nature and a mass of miscellaneous reading all aimed to interest readers in the automobile line.

Kaaterskill Clove Climb Postponed

Owing to scarcity of material available at this time, the reliability run and hill climb that was being promoted by the Motor Contest Association to take place July 16-18 from New York to Catskill, with the climb up Kaaterskill Clove, has been postponed until September 10-12.

Flanders "20" Under Mexican Flag

With two-thirds of its big tour from Quebec to Mexico City accomplished, the Flanders "20" car now en route is steadily plugging southward through the Mexican republic. So far the trip has proved eventful in that road conditions in Canada and in the Ozark section of Missouri were unprecedentedly bad. But those who ought to be in position to know declare that the Three Flags car has only started on its real trial. The Mexican roads are in a class by themselves.

"When they are good they are very, very good, and when they are bad they really deserve very little mention." At least that is the sentiment of several of those who have essayed the trip from Laredo to the capital.

There are numerous bandits of a peculiarly insistent character in the northern part of the country and while it is always pleasant, high on the central plateau if one can reconcile himself to a diet of frijoles and tortillas, superheated with a small red pepper that makes a Harlem gas stove seem like a January morning in Winnipeg.

The crew has expressed itself as "being game for the frijoles," and at latest advices the Flanders is down south of Monterey, working along toward the National road.

Regal Company Establishes Branches

For the last six months the Regal Motor Car Company has been engaged in the establishment of branch houses. For over two years the Regal Company has owned and operated a branch house in Detroit, and it was decided to open direct factory branches in the largest distributing centers in the United States and Canada.

The branches that have already been established are located in Detroit, Buffalo, Boston, New York, Philadelphia, Kansas City, Wichita, Oklahoma City, Chicago, Denver, Minneapolis, Indianapolis, San Francisco, Toledo, Lincoln, Neb., and Toronto, Ont.

New Club Formed at Macon, Ga.

MACON, GA., July 11—The Macon Automobile Association has been organized with the following officers: F. B. West, president; S. R. Jaques, Jr., vice-president; J. C. Wheeler, secretary, and L. O. Stevens, treasurer.

Detroit Prepares to Give Elks Notable Time

DETROIT, MICH., July 11—It is going to be a great week in Detroit; great for the Elks, who will be here 100,000 strong, counting wives and sweethearts, and great for the motor car interests of the city, for at no gathering since the auto came into vogue has it been such an important contributing factor as it will be in the 1910 reunion of the country's antlered tribe. The selling of cars this week will be a secondary consideration, except as the cars may sell themselves, so to speak, for the dealers, in common with Detroit citizens generally, will be too busy showing the visiting Elks a good time to think of business to any great extent, but they will reap their reward later on. The auto parade scheduled for Friday will likely prove an eye-opener to the visitors, and if they do not go back to their homes convinced that Detroit is the hub of the universe as far as the manufacture of motor cars is concerned, it will not be the fault of the local makers.

Robert K. Davis, of the Maxwell-Briscoe Detroit agency, is chairman of the auto committee, and he has been working for weeks on the details of the parade in the hope of making as fine a showing as possible. At first he figured on about 2000 cars, but the present outlook is that there will be nearly 3000 in line. As arranged, the parade will be about 20 miles long and will easily outdo anything of the kind ever attempted before. For Mr. Davis' use during the convention the Maxwell-Briscoe folks have provided a Maxwell roadster finished in white and purple, the Elks' colors. It made its first appearance on the streets yesterday and attracted much attention.

Conspicuous in the parade will be the Buick flyers which gave such a good account of themselves in the Indianapolis speedway races. Team Manager Wadsworth Warren arrived in the city last Tuesday with his crew, including the Chevrolet brothers and Burman.

The visiting Elks may have an opportunity to see just what the speed marvels can do before the week is over. Plans are under way for a series of exhibition matches at the Grosse Pointe race track, as an added feature of the week's program. In this event some lively brushes may be looked for. The entire complement of machines used at Indianapolis will be on exhibition here during the week and in the parade, including the Buick Special "60," the Buick Model 10, the Marquette-Buick 10 A and the Marquette-Buick 16-b.

The extensive grounds of the Detroit Athletic Club on Woodward avenue have been taken over entire by the General Motors Company, and a whole city of tents has been erected to take care of cars manufactured in General Motors plants and owned by visiting Elks. No charge will be made for this accommodation, and there is ample room.

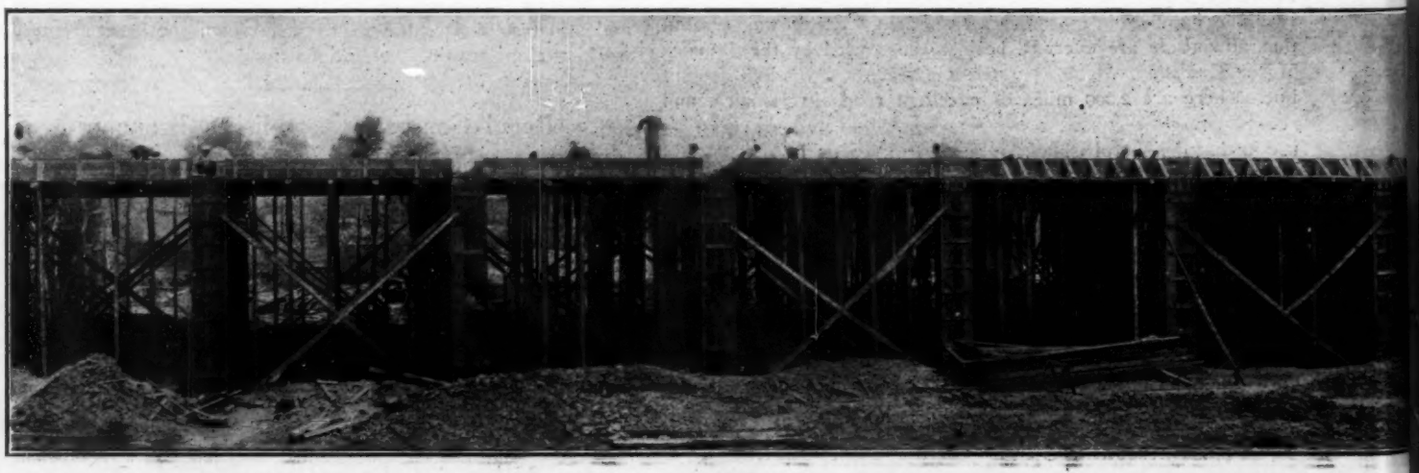
The Grabowsky Power Wagon Company has tendered the Elks the use of a special Palace sight-seeing car during the reunion, together with the services of a competent driver. The car was given a try-out last week with a party of prominent local Elks along as guests of the Grabowsky company, and it proved a big success. The car is finished in deep purple with white running gear.

For the relief work of the ambulance corps that will be on duty during the convention the Hudson Motor Car Company has tendered 12 machines and will supply more if they are needed, it is announced. A Hudson touring car has been donated as the first prize to the ladies making the finest showing in the grand parade next Thursday. It will be up to the ladies to decide which of their number shall have the use of the car.

The Brush car is getting its full share of publicity out of the reunion. The Abernathy "kids," Louis and Temple, aged 6 and 9 years, respectively, who rode 2,000 miles across the continent on horseback to greet Col. Roosevelt on his return trip, are headed this way in a Brush runabout purchased for them by their father in New York. They are due to arrive here Wednesday night and will be one of the big features in the auto parade Friday. A Maxwell car is acting as pathfinder on the trip from New York. A big dinner has been arranged for the "kids" on their arrival and Mayor Breitmeyer will extend a formal welcome.

W. K. Hadley, manager of the United States Motor Company's branch in Albany, N. Y., reached here yesterday afternoon after a 1,000-mile drive from Hartford, Conn., in a Columbia four-passenger roadster. The first leg of 135 miles to Albany was made in five hours flat. The roadster is the official car of the Albany lodge of Elks, and Mr. Hadley carried letters from the Albany lodge to the Grand Exalted Ruler of the order and from Gov. Hughes and the Mayor of Albany to Mayor Breitmeyer. Two punctures were the only mishaps on the trip. The actual running time was a trifle less than 33 hours.

Such is the demand for space in the new auto building at the State fair that it has been necessary to draw lots for it. The drawing took place in the Griswold House Friday evening and the Michigan Motor Sales Company secured the choicest position. The other firms in the order of the drawing are as follows: Cadillac Motor Sales Company, Overland Motor Car Com-



The giant factory plant of the Hudson Motor Car Company at Detroit is rapidly taking shape. The main building, which, when completed, will be one of the model automobile manufacturing plants in the country, is now well above ground and its outlines in reinforced concrete give a good idea of the immensity of the structure. The building as projected will cost in the neighborhood of $500,000 and at the present rate of construction, it will be finished this summer. The building, which is the last word in structural method, will be compact and economical of space, despite its vast size. In addition to the merely utilitarian factors of scientific

pany, W. F. V. Neuman, Keeler-Hupp Company, Detroit Motor Sales Company, J. P. Schneider, Brush Motor Car Company, Buick Motor Company, Van Dyke Auto Company, J. H. Brady Auto Company, Grant Bros., Rapid Motor Vehicle Company, Maxwell-Briscoe Auto Company, Harper-Aldrich Auto Company, Cartercar Company, Winton Motor Carriage Company, Regal Motor Company, Olds Motor Company, Security Auto Company, Lyon Motor Sales Company, Anderson Carriage Company, O. B. Fear, Montgomery Motor Sales Company, Ford Motor Company, Empire Tire Company, Atlantic Repair Company, Grace Motor Products Company, Emil-Grossman Company, Auto Equipment Company, Standard Oil Company and the Vesta Accumulator Company.

The answer of the Carhartt Automobile Corporation in the suit of the Columbia Motor Car Company and George B. Selden was filed in the circuit court last week by Henry C. Walters, the attorney of the independent manufacturers' organization. It differs from most of the others filed in that the company claims to have had a definite promise of a license as soon as any more are to be issued. Several new licenses have been issued since, but none to the Carhartt corporation. The answer also sets up that no cars had been manufactured at the time the suit was filed.

Sales Manager Craven, of the Sibley Motor Car Company, brought out the first new Sibley "20" 1911 model which will leave the factory Friday. The car has a 100-inch wheel base, 32-inch wheels, a roomy body with long hood, metal shroud around the dash and an oval gasoline tank in the rear. The steering wheel is laid well back. The Renault type of motor is used and the cylinders are cast in pairs. The engine is cooled by the thermo-syphon system and the Bosch ignition is used. The clutch is of the internal cone type; sliding transmission, with the three speeds ahead and reverse. The motor, clutch and transmission are in one unit with one central support in front and at each side of the clutch. The company will begin active operations in its new factory in the west end about July 18.

Collins & Company, distributors of Marmon cars, have moved into their new quarters at No. 1235 Woodward avenue, and will hold open house all week. The Stewart Speedometer Company will be established in its new home in the North Woodward section in a few days.

Martin D. Pulcher, purchasing agent and secretary of the Oakland Motor Car Company since its organization three years ago, has resigned to become general manager of the Bailey Motor Truck Company, in Detroit.

Two new factories closely identified with the motor industry have recently started operation in Detroit. They are the Murphy-Potter Company, manufacturing brass castings, and the Smith-Matthews Foundry Company, iron and semi-steel castings.

The Brush-Chicago Motor Company, of Detroit, has increased its capital stock from $11,000 to $12,000.

Carl H. Page, of New York, has been in the city for several days arranging for the first allotment of 1911 Chalmers cars. He is accompanied by Sales Manager Montgomery. Other Chalmers dealers in town are: H. H. Peters, Minneapolis, and J. H. Valentine, of the Amos Pierce Auto Company, of Syracuse.

Nashville Wants Twenty-mile Speedway

NASHVILLE, July 11—A 20-mile auto speedway, estimated to cost about $100,000, is a probability for Nashville, as the Nashville Automobile Club has launched a movement looking to that end. The matter is to be taken up for final action at the next membership meeting of the club and if it appears that there is enough interest in the matter, a large and representative committee will be appointed and the project pushed through.

Secretary C. C. Gilbert says his idea of the route is to start in the extreme Western suburbs of the city, pass Bosley Springs, a noted picknicking place, and come in the Harding road and Broadway, the swell pike and street of the city; cross over several other pikes around the southwestern suburbs and pass by Glendale and Cumberland Park, a distance of about twenty miles. It is proposed to have the speedway 100 feet wide, with a 40-foot driveway on each side and a 20-foot parkway in the middle. This would really give forty miles through the prettiest section surrounding the city.

One suggestion is that the driveway be paved with processed wooden blocks, and if this is done it will be one of the best in the country.

A club house is part of the plan. This would be near Bosley Springs. This could be made to cost any amount that suited the members. The cost of the road is estimated at $5,000 per mile. It is not believed the right of way would cost anything, as it is understood this would be donated. Mr. Gilbert's idea is to have the county issue bonds for the speedway. If the plan goes through it is proposed later to extend it to cross the Cumberland river, which runs through the center of the city, and go out several miles to the National Cemetery, where several thousand Union soldiers are buried. It is believed the U. S. Government could be induced to build a portion of the road leading to the cemetery, that is, to widen and improve the present road.

The whole matter will come up at the next meeting of the Automobile Club.

It is probable that all pikes leading out of Nashville will be oiled for a distance of three to five miles from the city limits and that the streets leading into the city from the pikes will also be oiled.

arrangement, the building will contain numerous sanitary features of high excellence, including plenty of light for the operatives, the highest type of plumbing and bathing arrangements, besides other factors that make for more comfort for the employees.

The accompanying picture shows enough of the structural work to give an idea of the size of the main building. The concrete pillars are clearly outlined in the illustration and as they form the basis of the structure, the picture has a certain degree of significance for all those interested in the building of similar plants.

The Munsey Historic Tour Interests Patriots

AFTER an interesting trip of three weeks, the pathfinding party of the Munsey Historic Tour completed its labors last week, having mapped out a course of 1650 miles for the run that is scheduled to start from Philadelphia August 15.

The route roughly is across New Jersey to West Point, from thence to Massachusetts, trending southward as far as New London, Conn. Boston is the eastern limit of the tour, where the cars will swing backward, crossing New Hampshire and Vermont, entering New York State at Lake Champlain. A day will be spent amid the scenes of early military achievements of the American colonists and the battlegrounds of the Revolutionary War adjacent to Lake Champlain, and then the westward course will again be resumed to Binghamton. A circle through Wilkes-Barre, and thence to Washington will complete the run, which is intended to be the feature of the year from a touring viewpoint.

The entry list will undoubtedly be large and representative, and already a big list is assured. The tour itself will require ten days and will combine in an extraordinary degree the business features of testing the cars and the pleasure of touring amid scenes of intense interest to patriots and scenery that is unexcelled on this side of the Cascade Mountains.

Items of Interest from Quaker City

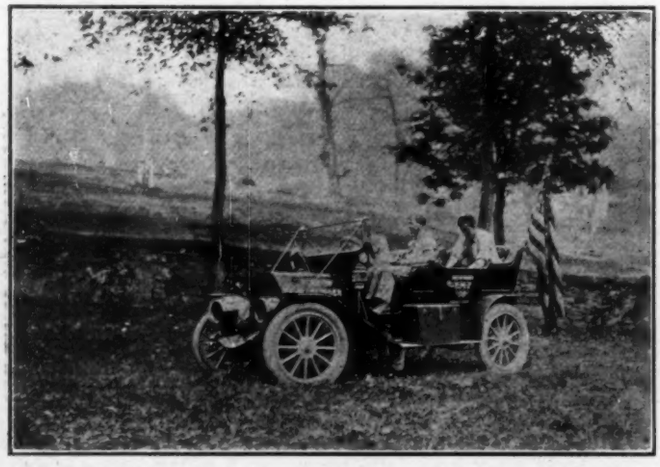
PHILADELPHIA, July 11—Announcement was made to-day by the Quaker City Motor Club that it will on Saturday, August 6, conduct a six-hour endurance contest at the Point Breeze track. The event will be open to stripped cars of Class C, Divisions 1 to 6 inclusive, for which the entrance fee will be $100. Two prizes will be awarded, the winning car to receive $750 and the second car $250.

William C. Longstreth, head of the Longstreth Motor Car Company, Philadelphia agents for the Alco and Pullman cars, sailed for Europe on Tuesday and is expected to be abroad for several weeks.

Announcement was made Saturday that the B. C. K. Motor Car Company, of Philadelphia, local representatives of the Kline-Kar, had been purchased by W. D. Shepherd and T. W. Pritchard, comprising the Krit Sales Company, 203-205 North Broad street, and that that company will be the distributing agency for both the Kline-Kar and the Krit.

Aroused to action by the tremendous success of the North Wildwood Automobile Club's Independence Day meet, other Jersey coast resorts are commencing to realize the advantages to be derived from holding automobile races. Nothing so attracts and enthuses the crowds that flock from the big cities as a series of races capably managed. The latest of the watering places to fall in line is Ocean City. A motor club was recently organized and held its initial run last Saturday to Cape May. Encouraged by the success attending the first effort, arrangements are now being made for an automobile race to take place shortly.

Clarence E. Purdy, formerly connected with the Bergdoll Motor Car Company, has been appointed superintendent of the Chalmers-Hipple Motor Car Company, 206 North Broad street, Philadelphia.



The Munseyites Stop at the Nicholas, Pa., Estate of Galusha Grow, Speaker of the House During War Times

Fourteen Enter Buffalo Tour to Date

BUFFALO, July 11—According to Orson E. Yeager, chairman of the contest and runs committee of the Automobile Club of Buffalo, the following are among the entries to the 300-mile reliability tour which will be run by the club September 7, 8, 9 and 10: The Poppenberg Automobile Company, Buffalo, two cars; Reo, touring class; Overland, runabout class; Meyer Carriage & Auto Company, of Buffalo, Pullman in the touring car trophy; Pullman Motor Car Company, of York, Pa., Pullman in the touring car trophy; Columbia Motor Car Company, of Hartford, at present undecided as to class entry; Regal Automobile Company, of Buffalo, Regal car in touring car class; Maxwell-Briscoe Buffalo Company, Maxwell car and an additional entry.

Meeting of Band of Gypsies Out of Bloomsburg, Pa.

Virginians Object to City Auto Tax

RICHMOND, VA., July 11—At a recent meeting of the Richmond Automobile Club unqualified endorsement was given by that organization to an ordinance now pending before the City Council which will prohibit persons under eighteen years of age from driving cars in the city.

The club entered earnest protest, however, against the proposed levying of a tax of $1 on all persons driving a car. The City Council is now preparing to pass an ordinance regulating the kind of horns to be used on all autos within the city limits.

William F. Gordon has arrived here after an automobile trip of 2,279 miles. In the party were Mr. Gordon, his wife, W. Douglas Gordon and Miss Mabel Walker. The trip was begun June 18 and was most delightful.

New York State had the muddiest roads encountered on the trip, while the roads between Wheeling, W. Va., and Pittsburg, Pa., were the roughest. Other States visited were delightful as far as roads were concerned.

Automobile News from the Boston Field

BOSTON, July 11—The Fisk Rubber Company, Chicopee, has closed a deal with a prominent Boston real estate man to erect a new building on Boylston street, in the heart of the motor colony. Work will be started at once. This will make four new buildings upon which work will be going on simultaneously for motor concerns, others being the Thomas, Fiat and Hartford Rubber Company.

The repair department completed for the Ford branch in Boston has been turned over to the company. It is a three-story concrete building, giving 17,000 square feet of space. The parts are on the first floor, repair department on the second and storage facilities for about 65 cars on the third. It is located in Cambridge, just over Harvard bridge. Manager Charles E. Fay has placed H. E. Partridge in charge of it.

Bay State A. A. members with their families, numbering more than 50, had their annual outing Saturday at Bedford, Mass., where the day was spent in athletic sports, followed by a dinner in the evening. It was a delightful outing.

The Rawles-Cobb Company, dealers in naval and mechanical supplies, has opened salesrooms for the Johnson cars, made in Milwaukee, at 741 Boylston street. The firm will sell both the pleasure and commercial vehicles, and expects to do well with this well-known make of automobile.

R. M. Daniels, manager of the Boston branch of the Studebaker Company, has resigned and the Studebaker interests will be looked after in future by the E-M-F officials, Charles A. Malley and B. N. Crockett. The E-M-F salesrooms will be enlarged and both lines will be handled from the one place, while the company will not have to build a garage as planned, but will use the new Studebaker one.

Plan to Offer $50,000 in Cash Prizes

LOWELL, MASS., July 11—While arrangements for holding a big race meeting on the Merrimack Valley course this fall are still in the tentative stage, plans are being projected that are aimed to bring about one of the most striking meets ever held in the United States. Last spring it was announced that no national championship races would be conducted at Lowell this year, and later preparations were made looking to the holding of a race meeting September 15-17, but at present John O. Heinze, president of the

Hartford Valley, on the road to Wilkes-Barre

Lowell Automobile Club, and a number of progressive citizens of Lowell are contemplating a meeting at which $50,000 in cash prizes will be hung up and an entrance fee of $5,000 will be charged.

The plans are still in embryo, but it is said that active preparations to improve the course, bank and widen the famous letter "S" turn and the legal preliminaries are being made.

Rush Work on Marquette Buildings

SAGINAW, MICH., July 11—Foundations for the Washington avenue buildings of the Marquette Motor Company are being rushed and the structures probably will be completed within three months. All the mechanics who can be obtained are working on the erection of the factory. Property in the vicinity is enjoying a decided boom and prospects are that street car service will be extended to the vicinity. Manager Willett estimates the minimum number of employees for the plant at 1,000.

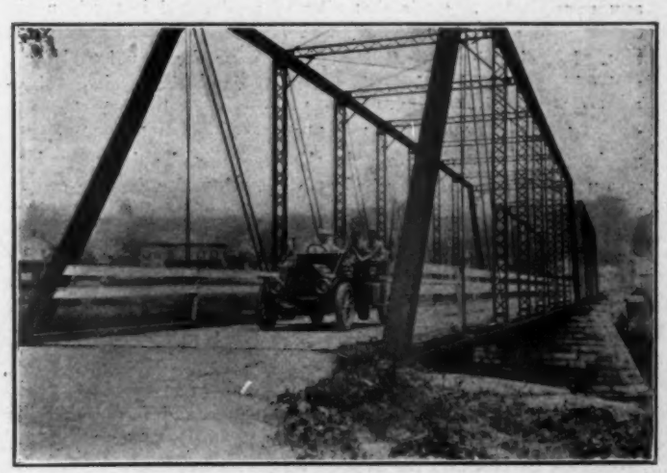
Race Meet for Atlanta Speedway

ATLANTA, GA., July 11—With a sanction granted for July 23 and with a tentative schedule of events drawn up, the Atlanta Speedway Association is soliciting entries for a local speedway meet to be held on the Speedway track. The program includes 15 events and offers a good variety. The races range in length from two miles to twenty and include offerings for all classes, from the smallest to the free-for-all.

Error in Hudson Output—Owen Plant at Detroit

Reports of the sale of cars this year have been so confusing, due to the large number of naughts employed, that mistakes are relatively easy to make, which is best illustrated by the following occurrence: In setting up an advertisement a comma was misplaced in a statement of the total of cars contracted for so that they read as follows: "46,00." A proofreader, noting that the comma was after the 6, figured out that there should be another naught, and he changed the copy to read "46,000." It never occurred to the proofreader that the comma was misplaced, but as a matter of fact the right expression is "4,600." The Hudson Motor Car Company, Detroit, Mich., wishes to let its patrons know that its cars contracted for hover around 4,600 automobiles, but it does not expect to reach the 46,000.

In the description of the Owen 1911 product, which appeared on pages 6 and 7 of THE AUTOMOBILE of July 7, it was erroneously stated that the plant is located in Indianapolis, whereas it is well known that the Owen factory is a Detroit landmark.



The Munsey pathfinders crossing the bridge over the Susquehanna at Otsego

A Row of Hangars on a French Aviation Field, Showing System of Storing the Machines

Aviation News of the Week

WITH his gasoline reservoir as dry as a New Yorker's throat is supposed to be on Sunday, Walter Brookins coasted down from an elevation of 6,275 feet in a Wright aeroplane and landed on the beach in safety after breaking the world's record for high flight in a heavier-than-air machine. The trial took place last Friday at Atlantic City in the presence of an assembly estimated to be fully 25,000. The first announcement made after the completion of the flight was that a height of 6,175 feet had been attained by the aviator, but subsequently the figures were amended, making them 100 feet greater.

Brookins' total time in the air was 1 hour, 3 minutes and 30 seconds. Starting on his official trial at 6:08, he pointed his machine upward at a moderate angle and for 55 minutes he swung back and forth in a spiral circle, mounting ever upward until the man in the big machine seemed no bigger than a pinpoint. After he had been in the air for 51 minutes, observations from the earth showed that the aeroplane was 5,680 feet in the air and was still rising steadily. At this point Brookins was seen to point the plane downward and then back again to the rising position. For five minutes more he continued to rise, and then poising gracefully, the airship swooped toward the beach on a long, gentle angle. Swifter and swifter the plane shot downward until those below held their breaths for fear that the daring youth and his machine would be dashed to bits. Then the plunge was halted and the aeroplane regained its horizontal position and seemed to float along parallel with the surface of the ocean about 500 feet above. Then in a series of short spiral plunges and swings Brookins brought his machine to the beach, landing in perfect form within 100 feet of the start.

He will be awarded a prize of $5,000 by the Atlantic City Aero Club in case his record is not excelled before the present meeting comes to a close.

After landing Mr. Brookins gave a summary of his experiences. Prior to the official trial he had taken a preliminary spin to test the barograph, an instrument to measure height, and also to tune up his motor and machine. Just before 6 o'clock the announcement was made that all was ready, and instantly a big crowd assembled, hampering the arrangements to a certain extent. But sharply at 6:08 the aviator gave the signal to let go, and with a rush the plane darted away from the station. Having attained a comfortable height, he remembered that he had not taken the precaution of replenishing his supply of gasoline, but as the guage showed plenty in the reservoir, he determined to go on and break the record if possible. At 1,800 feet he swung around in a wider circle and mounted rapidly into the high-flying clouds. At this point he was lost to sight of the crowds below and for a time he confessed he was out of his calculations and unable to estimate his position with any degree of accuracy. It grew very cold after passing above the clouds and even the brilliant summer sunshine did not seem to have much potency at the higher altitudes.

Mounting steadily to 6,100 feet, according to the barograph, Brookins again consulted his gasoline gauge and found that his supply was running very low. Then his motor began to miss from lack of fuel and the aviator was forced to the expedient of halting his rise and tipping the plane downward so that the gasoline in the bottom of the tank might feel the force of gravity and flow more freely into his carbureter. When the missing cylinders began again to exert their power Brookins tilted up his planes and renewed his ascent.

When the barograph showed 6,175 feet the motor again began to miss and the aviator shut down and prepared for his long, plunging dive back to earth.

Down the hill of air the machine coasted, gathering momentum from the power of gravity and slipping along at a dazzling rate of speed. The descent commenced at 7:04, and seven minutes later the aeroplane was at rest upon the beach, while the crowds gave vent to the biggest kind of an ovation to the chance-taking young man.

Clifford B. Harmon, the amateur aviator, has been making a series of interesting trials of his Farman biplane at Hempstead Plains during the past week. Mr. Harmon tried out his machine with a full equipment of pontoons before a big crowd Saturday in preparation for his flight across Long Island Sound. On Monday last Harmon made his attempt to fly across the Sound from the aviation grounds to the country home of his father-in-law, in Greenwich, Conn. In his first start he found that the pontoons he had added to his machine spoiled its equilibrium. He had been in the air but a very few minutes on his second attempt when his motor began to skip. With but three cylinders working he was forced to a hurried descent, from which he fortunately emerged with nothing worse than a shaking-up and a smashed machine. A race is being arranged between Mr. Harmon and Capt. Baldwin from Governor's Island up the East and North Rivers, circling Grant's Tomb, the contestants to go in opposite directions.

The new world's record marks for speed and distance which were set at Rheims last week were discussed widely in aero circles. The speed mark of nearly 70 miles an hour was acknowledged to be the most important by aviators who have had wide experience. Their opinion is a unit that the high speed attained in France foreshadows much higher attainable speeds there and elsewhere. The significance, according to the students of this phase of the air-flying problem, lies in the fact that if the aeroplane can be developed so that a speed of 120 miles an hour is demonstrated, the aeroplane will have triumphed over the uncertainty and danger of sudden, high and uneven winds. When such development has been achieved they point out that travel via the air will take rank in safety with that of travel in express trains on the earth's surface.

In the same biplane with which he made his phenomenal Albany-New York trip, Glenn H. Curtiss, on Monday last, at Atlantic City, established a record for a 50-mile flight in America. His time was 1 hour, 14 minutes and 59 seconds, and the course was 2 1-2 miles in length, from Chelsea to the Steel Pier. He averaged about 40 miles an hour.

Charles K. Hamilton, hero of the first round-trip flight between big cities, has broken with Glenn H. Curtiss on account of some alleged affront to his dignity at Atlantic City. Hamilton's engine had been acting balkily for some time and there was some hitch about the renewal of his motor by Curtiss. Without warning, Hamilton stored his machine and notified Curtiss that he was no longer working. It is said that he will operate another type of biplane in the immediate future.

Auto Decked with 10,000 Roses

At the Portland (Ore.) Rose Festival, held early in June, one of the most striking exhibits was a Studebaker-Garford "40," which appeared in the parade. The automobile was covered with 10,000 roses and a quantity of green ferns and grasses. The

Studebaker-Garford "40" Featured the Portland Festival

form of the decorations of the Studebaker-Garford was that of a giant gondola.

The exhibit attracted an immense amount of comment along the line of the parade. The Rose Festival is an institution peculiar to the Pacific coast, where it corresponds in large measure to the Mardi-Gras of New Orleans and other Southern cities.

Los Angeles Frames Contest Program

LOS ANGELES, July 11—The activity in motor racing circles this coming fall in California will more than make up for the dormant state of the sport this summer.

The first race on the coast will be the San Francisco road race over a course which will take the cars through Golden Gate Park and up the hill of the recent hill climb. Many cars will be entered, some of which will be sent to Los Angeles for the Santa Monica race, which follows on September 24. Los Angeles will be represented by good talent.

The annual Los Angeles-Mt. Baldy road race was originally set for September 18, but as the Santa Monica will follow the Saturday after, there is a conflict which will make a difference in one of the events. It is the belief that the run will be more welcome later on and promise of a better "test" is given.

In October the Motordrome will resume business with a national circuit meet. This will be followed by racing in November and again during the Christmas holidays. It is possible that the meet in October will be a 24-hour race.

November will see the third annual running of the Los Angeles-Phœnix race.

Ten cars were entered last year and fully that many are expected to compete this season.

The race really should start in Phœnix and finish in Los Angeles as the Arizona town failed to show the least enthusiasm.

But, regardless of these matters, it is a grand race, which takes the cars over a course where they buck hub-deep sand for 100 miles.

Brooklyn Reliability Postponed

The reliability contest of the Brooklyn Motor Vehicle Dealers' Association, scheduled for July 19 and 20, has been postponed until August 9 and 10. Forty tentative entries have already been made.

Sentinel Trophy Run Looms Large

MILWAUKEE, July 11—The first annual tour of the Wisconsin State A. A. for the Milwaukee *Sentinel* Trophy promises to bring out a larger field of contestants than any State tour in America up to this time. There are already twenty entries in the hands of Chairman George A. West, who is confident that there will be thirty-five starters at the least. On July 16 all contesting cars will be brought to the Auditorium for inspection by the technical board, under David Beecroft, of Chicago.

The start will be made at 8 o'clock Monday morning, July 18. More than 780 miles will be covered in the five days' run covering practically the entire State. In addition to the $800 *Sentinel* Trophy, the State association will award gold medals and certificates of merit to all cars scoring not less than 97 per cent. of the winning car's score. Cars listing at $1,601 and over will maintain an average speed of 18 miles an hour; cars listing at $801 and up to $1,600 will run sixteen miles, while those listing under $800 will follow a fifteen-mile schedule.

Philadelphia Motordrome Progressing

Work on the Philadelphia motordrome at Clementon, N. J., has taken wonderful strides in the past fortnight.

Large gangs of laborers, carpenters, mechanics, etc., have been set to work for the purpose of converting this now uncultivated piece of country into a tremendous drome for motor car races and aviation meets.

The six hangars which are being erected on the grounds for the storing of aeroplanes belonging to members of the Aero Club of Pennsylvania are near completion.

Reliability Run for Motor Trucks

A motor truck reliability run, to be held August 12-13, under the auspices of the Philadelphia *North American*, is the first event of its kind ever attempted. The contest has official sanction from the Contest Board, and its conditions have been attractively framed. The route from Philadelphia to Atlantic City will be long, varied and populous enough to test the commercial vehicles under the eyes of a considerable section of the public. The Quaker City Motor Club will co-operate with the newspaper.

Helps Motor "Cops" to Trace Offenders

In the current issue of *The Packard* is shown a new kink in the location of the rear license tag—on the right fender, with

Motor "cops" can't go astray with rear lamp in this position

the tail light so disposed on the left fender that it casts its direct rays upon the number plate, illuminating it distinctly.

A New Controlling Mechanism for Motor Vehicles

LAWRENCE WHITCOMB, Treasurer of the National Brake and Clutch Company, Boston, Mass., has invented an improvement in controlling mechanism of a motor vehicle, whereby the latter is prevented from being driven at a speed in excess of a predetermined rate, while leaving the motor free to develop its full capacity when the speed of the vehicle falls below the predetermined rate. For this purpose a moving body of liquid is employed, which is responsive to the speed of the vehicle and which actuates or controls the supply of gas or explosive mixture to the motor or which controls the ignition. The moving body of liquid is put in motion by the running gear of the vehicle and may be operatively connected with a throttle valve governing the supply of gas to the motor, or it may be operatively connected with a circuit controller in the igniter circuit. Provision is made for varying the maximum speed limit at which the vehicle may travel, and provision may also be made for utilizing the moving body of liquid for applying the brakes to the vehicle when the maximum speed limit is reached.

In Fig. 1, the moving body of liquid controls a throttle valve in the gas supply pipe 20 leading from the carbureter 21 to the cylinders of the motor b, the pipe 20 being shown as provided with four branches 22. Referring to Figs. 3, 4 and 5, the throttle valve is shown as a hollow piston valve 25 provided with a central wall or partition 26 through which is extended a piston rod 27, the said piston having a series of ports 28 in its circumference, which are adapted to register with corresponding ports 29 in a cylindrical shell or sleeve 30 located in a valve casing or fitting 31 provided with a gas inlet port 32 and with a gas outlet port 33. The inlet port 32 is connected with the carbureter 21, and the outlet port 33 is connected with the gas inlet pipe 20 leading to the cylinders of the motor. The valve shell or sleeve 30 is fixed within the casing 31 and is open at its ends, and the hollow piston valve is also open at its ends, so that gas can pass into the valve from the casing 31 at all times and pass to the motor when the ports 28 in the valve register with or uncover the ports 29 in the shell 30. The valve 25 is acted upon by a spring 35 so as to open the ports 29 and supply gas to the motor as long as the speed of the vehicle is below the maximum set. The valve 25 is moved to close the ports 29 and shut off the supply of gas to the motor, when the speed of the vehicle reaches the maximum determined upon and for this purpose, the valve stem or rod 27 co-operates with a diaphragm 38 of leather or other suitable material, which may be provided as shown with a metal bearing plate or button 39, and which is interposed between the casing or fitting 31 and a liquid containing chamber or well 40, herein shown as in screw-threaded engagement with the valve fitting or casing 31. The liquid chamber or well 40 may be designated a pressure chamber, which is provided with a liquid inlet pipe 41 extended up into it, and with a liquid outlet pipe 42 leading from the bottom of the pressure chamber, the said pipes communicating with a liquid pump, which is operatively connected with the running gear of the vehicle to be driven thereby only when the vehicle is in motion. In the present instance, one form of liquid pump is shown, which comprises a casing 43 containing two intermeshing gears or bucket wheels 44, 45 (see Fig. 7), which are mounted upon suitable shafts 48, 49, within the casing, one shaft as 48 being extended through one side of the casing 43 into a second casing 50, wherein it has mounted on it a gear 51 in mesh with a gear or pinion 52, which in turn meshes with a gear 53 fast on the driven shaft d, (See Figs. 2 and 10). The pump casing 43 is provided with an outlet pipe 55, which is extended to the pressure chamber and is connected with or forms part of the liquid inlet pipe 41 therefor. The pump casing 43 is provided with a fluid inlet pipe 56, which in the present instance is connected with a liquid supply tank or reservoir 57 (see Fig. 1), which is connected by a pipe 58 with the outlet chamber 59 of a regulating device shown separately in Fig. 6, and consisting of a casing 60 having a partition wall 61 forming the outlet chamber 59 and an inlet chamber 62, which are adapted to be connected by a port 63 in the partition wall 61, with which co-operates a valve 64. The inlet chamber 62 has connected with it the outlet pipe 42 for the pressure chamber 40. The valve 64 is provided as shown with a threaded stem 65, which is extended through the casing 60 and into a chamber 66 having a removable wall or cover comprising a metal ring 67 and a glass disk 68, through which numbers on the bottom 69 of the chamber and indicative of speed units, such as miles, may be seen. The valve stem 65 has attached to it a handle or pointer 70, which registers with the numbers referred to and which may co-operate with studs or pins 71 depending from the ring 67 and forming locking devices for the said pointer or hanger to retain the latter and the valve 64 in their adjusted positions for a purpose as will be described. By turning the handle 70, the valve 64 may be moved toward or from the port 63 so as to restrict or enlarge the flow of liquid through the port and thereby increase or decrease the pressure of the liquid in the chamber 40 upon the diaphragm 38, with the corresponding result of diminishing or increasing the amount of gas supplied to the engine. The cover of the chamber 66 in which the regulating apparatus is located may be sealed or locked to unauthorized persons by means of a lock 73.

In the arrangement of the apparatus herein shown, the valve 25 is represented as independent of the usual throttle valve not shown, but which is under the control of the operator of the vehicle, and when the vehicle or car is at rest, the valve 25 is opened wide by the spring 35.

When the car is in motion, the liquid pump is driven from the running gear of the vehicle and takes the liquid from the supply tank 57 and forces it into the pressure chamber 40, from which it passes through the pipe 42 into the chamber 62 of the regulator, and if the valve 64 is open, said liquid passes through the port 63, chamber 59, and pipe 58, back to the supply tank or reservoir 57. By varying the position of the valve 64 with relation to the port 63,

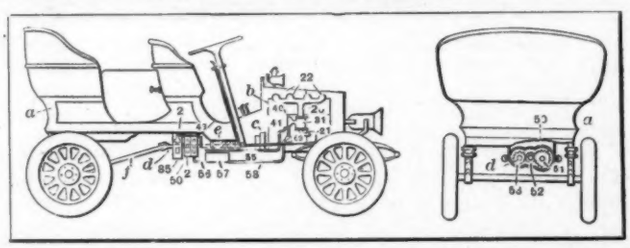


Fig. 1—Side elevation showing application of speed regulator

Fig. 2—Cross section on line 2-2, Fig. 1, with body in elevation

the circulation of the liquid may be varied so that more or less liquid accumulates in the pressure chamber 40 and the pressure of the same upon the diaphragm is varied, so that the valve 25 is operated to supply more or less gas to the engine according to the maximum speed it is desired the vehicle should travel. For instance, let it be supposed, that it is desired to limit the maximum speed of the vehicle to twenty miles an hour. In this case, the owner of the vehicle or other authorized person sets the handle or pointer to register with the number 20 of the regulator. This movement of the handle causes the valve 64 to be moved with relation to the port 63, so as to restrict the flow of the liquid through the regulator and cause the liquid to accumulate in the chamber 40, until such pressure has been increased sufficiently to move the diaphragm 38 and the valve 25 so as to diminish the supply of gas to the motor to such extent as will prevent the speed of the vehicle exceeding the maximum set, say twenty miles per hour, and if desired, the valve 25 may be entirely closed at such time. When the speed of the vehicle drops below the maximum, the pressure in the chamber 40 diminishes, and allows the spring 35 to move the valve 25 in the opposite direction and increase the supply of gas to the motor.

While the vehicle is traveling below the maximum speed, the operator is free to develop the full power of the motor if desired, as for instance in climbing hills or traveling over sandy roads. The spring 35 may be of such strength as will hold the valve 25 wide open until the vehicle is traveling at the maximum speed, at which time, the pressure in the chamber 40 has increased sufficiently

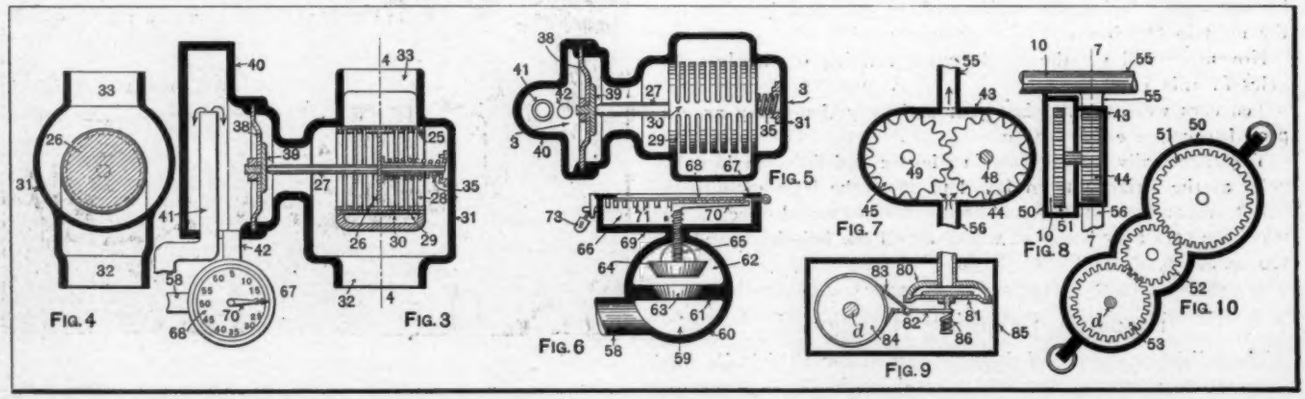


Fig. 3—Sectional detail of throttle valve and operating mechanism. Fig. 4—Cross section on line 4-4, Fig. 3. Fig. 5—Partial plan and section of throttle valve. Fig. 6—Showing details of the speed regulating device. Fig. 7—Section on line 7-7, Fig. 8. Fig. 8—Details of the liquid pump. Fig. 9—Sectional detail of liquid-pressure brake. Fig. 10—Section on line 10-10, Fig. 8

to overcome the spring and completely cut off the motor from the gas supply, or if desired the spring 35 may be adjusted to permit of a gradual closing of the valve 25. If desired the liquid pressure may also be utilized to apply a brake to stop the vehicle when the maximum speed limit is reached, which may be accomplished as herein represented, by connecting the pipe 55 with a chamber 80 (see Figs. 1 and 9), having a diaphragm 81, which acts on a lever 82 connected with a band brake 83, which engages a brake-wheel 84 fast on the driven shaft d. The brake band 83 and its operating mechanism may be located in a suitable case 85. When the fluid pressure reaches the point at which the valve 25 is closed, it may be sufficient to actuate the diaphragm 81 and apply the brake 83 to the wheel 84, and when the pressure is reduced, the brake may be released by the spring 86 acting on the sleeve 82.

Among the claims made for this device are: A valve to control the supply of explosive medium to said motor, a chamber containing a diaphragm operatively connected with said valve, a liquid pump driven by said mechanism and connected with said chamber to create a pressure upon said diaphragm by a moving body of liquid, means for regulating the liquid pressure upon said diaphragm to operate said valve and control said motor when the speed of the vehicle reaches a predetermined point, a brake, and a diaphragm operatively connected with said brake and responsive to pressure of the said moving body of liquid, substantially as described; a governor means for operatively connecting the governor with the vehicle to cause the governor to respond to the speed of the vehicle at all times while the vehicle is in motion and irrespective of the speed of the motor, and means to operatively connect said governor with said diaphragm.

Trade Notes of Interest to Maker, Agent and Garage Keeper

Adolph Eastman will sever his connection with the Wagner-Field Company on July 16.

H. G. Twelvetree has taken the active management of the Cleveland Rambler agency.

Manager F. S. Rockwell, of the Toledo Buick branch, has taken the agency for the Reliance motor truck.

The Glidden Garage Company has been incorporated in Buffalo; capital stock, $10,000. Directors: Oscar, Mary E. and Harry C. Meyer.

The R. E. Hardy Company has announced that the manufacture of Sta-Rite ignition plugs in Canada has commenced at its Windsor factory.

The New England Motor Vehicle Company, of Boston, has taken on the Parry car, the agency for which had been discontinued a few months ago.

Gray & Davis, makers of high-grade lamps, have made the announcement that they are shipping the Cadillac Motor Car Company, of Detroit, four carloads of lamps each month.

The Porter-Lovette Auto Company has just opened a fine new garage at 548 Grand River, corner Myrtle, Detroit. This is a one-story, concrete building, with a capacity of 75 cars.

V. M. Palmer, chief engineer of the Selden Motor Vehicle Company, Rochester, N. Y., has resigned his position to accept a similar place with the Sheldon Axle Company, of Wilkes-Barre, Pa.

Charles E. J. Lang, of the Rauch & Lang Carriage Company, is now on a tour around the world. He will visit many of the larger cities of the world, and incidentally will open up markets for the electric car made by the firm.

The Mercer Automobile Company, of Trenton, N. J., announces that the price of its 1911 stock model, including full lamp equipment, tools and repair kit, will be $2,150. Touring car, toy tonneau and Speedster are the chief styles.

The General Motors Company will make extensive improvements on the Elmore factory at Clyde, Ohio. A new machinery building, 200 feet wide and 250 feet long, will be erected, making the main factory structure 660 by 300 feet.

Ground was broken the past week for the Seattle Taxicab Co.'s new garage at Ninth and Pike streets. The structure will be built of brick and the cost will be $25,000.

George F. Reim, formerly with R. R. Kimball, has secured the Omaha Cadillac agency and formed a partnership with W. R. Drummond to handle the Cadillac car. The new firm will occupy the garage of C. F. Louck at 2550 Farnum street.

Joe Downey, the well-known race driver of Boston, has been spending some time at Newburyport, where William Hilliard is experimenting with a Burgess aeroplane, and he expects to go into the flying business as soon as he can get a machine.

The C. A. Shaler Co., Waupun, Wis., manufacturers of the Shaler Electric Vulcanizers, has awarded contracts for the construction of a new factory. The main building is to be of concrete, and electric power transmission is to be used exclusively.

C. J. Merbach and Gordon S. Morse will build a large garage, 100 by 100 ft. in dimensions, on Watson street, near Woodward, Detroit, with a machine shop in connection. This will be an all-concrete and steel building, and will accommodate 75 cars.

The annual outing of the employees of C. F. Splitdorf at Schroeder's Unionport Park, Saturday, June 25, was largely attended. Prize bowling, dancing and athletic events was the order of the day, the weather was perfect and the affair enjoyable.

George L. Osborne has been appointed sales manager of the Boston branch of the Peerless Company, while H. C. Mayo has been placed in charge of the outside business in New England. Manager John L. Snow announces that the new building for the branch will be ready for occupancy about August 1.

Frank F. Matheson, general manager of the Matheson Motor Car Company, is slowly recovering from an operation for appendicitis. On the occasion of his last visit to New York on June 18, Mr. Matheson was taken suddenly ill in the Knickerbocker Hotel. He was promptly removed to Wilkes-Barre, Pa., and there underwent an operation for the removal of his appendix.

C. L. Simmons has associated himself with the Lozier Motor Company, and has started on an extended trip throughout the South and West, visiting old agencies and extending the Lozier field of operation into new territory.

B. F. Hoffman, Jack Calvin and J. M. Calkins have formed a partnership at Bryan, O., for the purpose of erecting and operating a garage and repair shop in that city. The building, which will be located just east of the Jefferson Hotel, will be 44 feet by 130 feet in dimensions, and of substantial construction.

The Tokheim Manufacturing Company, of Cedar Rapids, Iowa, has opened a branch office in Detroit at 300 Woodward avenue. This is in charge of R. P. Hanson. The company makes a line of gasoline and oil handling apparatus, both in the hand-actuated and vacuum-operated types, as well as all parts for oil storage and handling.

The Yuster Axle and Transmission Company, of South Bend, Ind., has been absorbed by a syndicate consisting of J. C. Paxton, president of the Merchants' National Bank, and several others. Mr. Yuster retains an interest as vice-president. The property will be consolidated with the Clover Leaf Machine Company. A new factory with 75,000 square feet of floor space is projected.

A Metz car, made at Waltham, Mass., is said to have traveled from Iron Hill, Md., to Winchester, N. H., traversing nine States in a single day. The States covered were Maryland, Delaware, Pennsylvania, New Jersey, New York, Connecticut, Massachusetts, Vermont and New Hampshire. The tour touched 18 cities having a population of more than 20,000, or an aggregate of over 7,000,000.

Albert Bennet, who has been sales manager for the Colt-Stratton Company, Eastern distributors for the Cole "30," has taken charge of the Henderson Motor Sales Company, of Indianapolis, and in addition to his work of handling the Cole car in the East will look after the Westcott "40," which is distributed through New York State and New England by the recently organized Dunlop-Taylor Motor Company.

Seen in the Show Window

ACCESSORY makers are now recognized as of the greatest importance to the industry, they being specialists, and the trade demanding a larger output than the makers of cars are able to cope with. The Cotta Transmission Company, Rockford, Ill., is handling work of this character on a large scale, and as an illustration of the character of the product being turned out at this plant, one specimen (AE) is here presented. The design is stable, the material used is fitting, and the character of the workmanship is up to a high standard.

NOT to mention the sanitary aspect of the matter, the idea of a speaking tube as a medium of communication between passenger and chauffeur has many objections. It is difficult to speak and to hear through a tube, and the electric devices which have supplanted the latter, in a measure, have the defect of a limited range of instructions, so that it frequently becomes necessary to open the window when the passenger desires to talk with the driver. The Hall's Rigid Motor Flap (AF), now being marketed by S. F. Edge (Ltd.), 14 New Burlington street, London, Eng., meets these objections very thoroughly. It is a neat and solidly made metal frame, finished in nickel or brass, and easily opened by touching a button at the bottom. The flap is held open by means of a spring.

AMONG the latest devices for transmission work is the pneumatic transmission here shown (AG), which is made by the Pneumatic Transmission & Clutch Company, Los Angeles, Cal. This device provides mechanism to take the place of the usual flywheel, clutch and transmission gears.

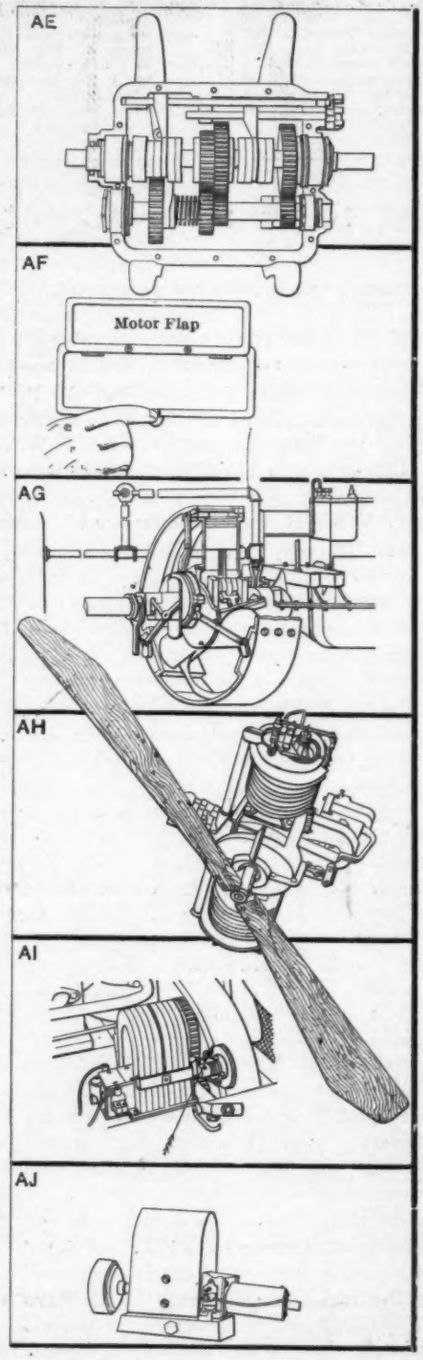
In accomplishing this two members are used: the one connected directly to the engine, being ordinarily the driving member, and the other connected to the shaft or driven member. On the driving member is mounted a plurality of cylinders in which pistons attached to the driven member are adapted to reciprocate. These pistons are eccentrically connected to the driven shaft while the cylinders are concentrically arranged around the axis of the driving member, so that upon any relative rotation of the members the pistons will be reciprocated in the cylinders.

By retarding the action of the pistons in the cylinders, the driven shaft may be more or less rigidly locked to the driving member; and this retarding or locking means is compressed air in the cylinders behind the pistons. Openings in cylinders are provided which may be restricted, through which the air must pass, and thus the amount of locking effect between the two members may be regulated at the will of operator. Automatic valves are provided so that air is taken into cylinders from atmosphere and is pumped out through these restricted ports. The ports are connected with a pressure reservoir into which the air is pumped.

When it is desired to start the engine, or run the car in either direction, air is thrown from this reservoir into cylinders through the valves and the clutch-transmission member becomes a rotary air engine.

The piston chamber valves operate automatically, and the entire mechanism is controlled by one three-way valve located between clutch and storage tank by which the locking effect of clutch or driving effect of air engine is operated at will.

Air pressure in tank is automatically kept constant through a by-pass valve.



(AE)—A Specimen of the Cotta Transmission Company's Work

(AF)—The Halls Rigid Motor Flap—A Needed Convenience

(AG)—Pneumatic Transmission Which Replaces Fly-Wheel, Clutch and Gears

(AH)—The Detroit Light-Weight Engine for Aeroplane Work

(AI)—Holzer-Cabot Idea of Magneto Drive by Friction from Motor Fly-Wheel

(AJ)—The Economy Perfection Automatic Battery Charger

THE demand for a low-priced, light-weight motor for aeronautic purposes has resulted in attracting the attention of numerous designers. Among them, the Detroit Aeroplane Company has perfected and is manufacturing a two-cylinder, air-cooled engine (AH) of the double-opposed type, four-cycle, 5-inch bore and 5-inch stroke, with a speed range of from 700 to 1500 R. P. M., and developing between 20 and 30 horsepower. The complete engine weighs but 98 pounds. The company will make and attach propellers to motors on special request, and keeps in stock sizes between 5 and 8-feet diameter and 3 to 7-feet pitch.

JUST now the question of magneto ignition is being taken up by many owners of old automobiles, and in some of the used models it is quite a problem to apply a magneto. Referring to (AI) of the Holzer-Cabot Electric Company's magneto ignition equipment, it will be observed that provision is made to drive the magneto from the flywheel of the motor. A friction drive is provided, and the method of the use of the principle is such that the result is satisfactory. The plant of the company at Boston, Mass., is well equipped to do work of this character.

THE general adoption of electricity for lighting automobiles and motor boats has been retarded by lack of a proper and dependable current supply. To remedy this defect, the Economy Manufacturing Company, of Economy, Pa., has introduced the Perfection Battery Charger (AJ), which automatically keeps the storage battery always supplied at practically no expense for maintenance and obviating the necessity of removing the battery from the box. Either friction, gear or belt drive may be used with this handy device.